THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES.

JUNE, 1899.

A STUDY OF MULTIPLE-METASTATIC ANGIOSARCOMA.

By H. V. Würdemann, M.D.,
of Milwaukee,
Ophthalmic and Aural Surgeon to the Milwaukee Children's Hospital and to the Milwaukee County Hospital for the Chronic Insane,

assisted by

Samuel H. Friend, M.D.,
of Milwaukee,
Attending Physician to the Milwaukee Children's Hospital,

and

Nelson M. Black, M.D.,
Captain and Assistant Surgeon, U. S. V.

Cohnheim[6] defines tumor tissue to be an atypical new formation starting in a latent embryonic rudiment. The tumor germs consist of embryonic cells, and it is only when they are favored by external conditions, such as supply of nutriment and their relation to surrounding parts, that they begin to multiply and form a tumor.

Senn[8] says that sarcoma tissue is produced from the matrix of embryonic tissue-cells of congenital or post-natal origin. He describes angiosarcoma as usually of a more or less tuberous structure. Its consistence varies from that of a jelly-like mass to the density of a cartilage. On section the surface presents an alveolar structure, but seldom regularly. In addition there is great vascularity; occasional blood-cysts and hemorrhages impart a variegated appearance. Under the microscope angiosarcoma presents a reticular, seldom alveolar, structure; the cells are arranged in the form of strands corresponding to the bloodvessels. If the vessels do not contain blood the tumor simulates carcinoma. The cells are epithelioid in shape, are normally multinuclear, often show prolongations, and their margins are not as sharply defined from the

ground-substance as in carcinoma. The ground-substance is composed of connective tissue in any of its varieties; vessels are numerous, large, and always capillary, and the intercellular tissue is scanty, imparting to the structure an angiomatous appearance. Angiosarcoma is rare, and is most frequently found in the head. The growth of the tumor is slow, but recurrence is rapid. In five out of sixty cases[6] the tumor gave rise to metastasis.

For the diagnosis of neoplasms of the orbit, Swanzy[33] emphasizes the following points: Exophthalmos, palpation, derangement of vision, pain, loss of motility, pulsation, and the consistence of the tumor. Jacqs[33] gives an additional sign—the souffle which is produced by pressure of the ophthalmic artery on the branches of the dilated ophthalmic veins. A diagnosis of orbital tumor is possible only when the growth has reached sufficient development to show a number of the signs above enumerated; and if the primary tumor be of a malignant nature, particularly of the metastatic form, and especially of the angiotic variety, neither a diagnosis nor an operation can be made sufficiently early to insure the life of the patient, as by this time the tumor is too fully developed and has already sent forth its branches or its seeds into other structures or organs, from derangement of which death ensues. Our own experience with these growths, as well as a perusal of the literature, proves to us that sarcoma of the orbit is necessarily fatal, no matter what or how many operations be done to remove the primary focus of the disease.

In a case[41] of metastatic sarcoma originating in the orbit coming under Würdemann's observation the eyeball had been enucleated for "inflammation" three months before by another physician. Neither the patient nor the family were made aware of the malignant nature of the disease until a tumor appeared in the orbit; so the eyeball was probably neither examined nor a diagnosis made. Würdemann removed the entire contents of the orbit. Microscopical examination showed the tumor to be a small, round-celled sarcoma, the cut edges of the optic nerve being infiltrated. Recurrence in the orbit did not take place for three years. About two years after the original operation the liver was found to be enlarged, and, later, metastatic sarcomata appeared in other internal organs of the body and in the skin in different localities, the liver becoming of enormous size, the patient dying of metastatic tumor of the brain three and one-half years after the exenteration.

Dalziel[13] has operated seven times in one case for recurrent sarcoma originating in the orbit, giving rise to secondary growths in the cheek, over the mastoid, in the upper lip, in the superior maxilla, and in the pterygoid processes. The orbital contents were removed four years previously for primary sarcoma of the lachrymal gland. The last operation had been done fifteen months before his report was made, and there

had been no recurrence since. Sarcomatous tissue of the small round-celled variety was found. There was no evidence of visceral lesions.

Stirling[32] reports several cases of sarcoma of the orbit, and emphasizes the importance of an early diagnosis and thorough operation, having some of the cases under obervation four and one-half years after the operation in which there is no return of the tumor growth.

Despite favorable reports of this nature, it may be accepted as a truism that if cases of orbital sarcoma be watched long enough the neoplasm will be found to have returned in either the original situation or some other part of the body. Experience and the literature show that if metastasis occurs when the orbit is affected by sarcoma it is usually the visceral organs that become affected. It seems likewise true that, if the orbit be implicated in general metastatic sarcoma, this region is the original place involved, and the disease of other organs is caused through metastasis.

Stirling[32] shows that sarcoma affects both the uveal tract and the orbit in males and females in about equal proportions. The average age in uveal sarcoma is forty-eight and one-half years, and in primary orbital cases the growth first appeared, on the average, at twenty-eight and one-sixth years. There is but little tendency for one side to be affected more frequently than the other. In only four cases out of 103 was there history of tumors in near relatives. In three out of seven cases that recurred there were metastatic growths. Recurrence took place locally from a few weeks to three years after operation. In every case in which recurrence took place the patient died of sarcoma. In the primary orbital cases recurrence was reported to have occurred in 58.6 per cent. The average time elapsing between operation and recurrence was twenty months. Stirling's results show a difference between growths primarily affecting the uveal tract and those beginning in the orbit. In the former 8.86 per cent. recurred in the region of the orbit, and death in 32.9 per cent. was due to metastasis. In the latter, when recurrence took place at all, the orbit was always affected, even when other organs were attacked. Stirling concludes that it is probably less dangerous to have uveal sarcoma than a sarcoma of the orbit.

The authors have recently had the opportunity to observe a case of multiple angiosarcoma with wide-spread metastasis and infiltration into various organs. The case was seen in its incipiency, was carefully studied during its entire course, and a complete post-mortem examination of the diseased tissues was made.

J. McG., female, aged five years and seven months, a child of Irish-American parents, was referred to Dr. H. V. Würdemann, October 18, 1897, by Dr. E. J. Kelley, on account of left-sided exophthalmos, due to a tumor in the orbit. The sight on both sides was apparently normal. The left eye, although directed downward and outward, was voluntarily movable in all directions.

Family History. Grandfather on paternal side died of old age. Grandmother still alive. Father's health has always been good. No tubercular or carcinomatous history on his side. Grandfather on maternal side died of cancer of the stomach. Grandmother died in childbirth. Mother's health has been good until recently, when she has suffered from nervous dyspepsia and neurasthenia. Commenced to menstruate at fifteen years of age; she has had eight children; her labors have been easy; one miscarriage occurred at seven months. One child died of malnutrition at less than one year of age; the others are living. One boy, sixteen years old, had spinal meningitis at four years of age, leaving curvature of the spine. One boy, fourteen years of age, had supposed tubercular disease of the knee-joint. The limb is now deformed. The other children are healthy, except the one whose case is here reported.

Personal History. The child was delivered by Dr. S. W. French, the labor being easy; the infant was apparently normal; raised partly by wet nurse and partly by bottle. She had no illness other than usual indispositions of infancy, and was not ill during early childhood up to this time. September 10, 1897, the left eye was observed to be diverging and slightly protruding. The general condition before this time had been good, but about this time she suffered from indigestion, which was followed by malnutrition.

FIG. 1.

Condition of patient January 1, 1898.

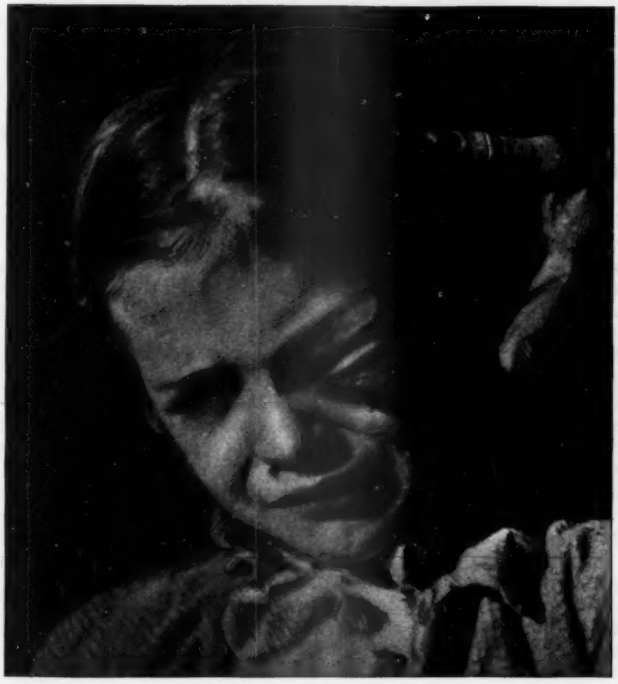
October 18, 1897, she was brought to the office by Dr. E. J. Kelley, he having seen her a few days before. The child weighed about forty pounds, was anæmic and poorly nourished. There was exophthalmos of the left eye, with protrusion downward and outward. An irregular growth was felt, which evidently proceeded from the upper and inner angle of the orbit; this was movable, slightly nodulated, and gave evidence of fluctuation. There was some little ecchymosis of the upper lid. There was a history of indigestion and intestinal trouble during the last month, probably caused by the diet allowed, for when placed in the hospital on a good, wholesome diet this disappeared. Ophthalmoscopic examination showed nothing abnormal beyond congested retinal veins in the left eye. The vision was not obtained, owing to the child's ignorance. General examination by palpation, percussion, and auscultation revealed nothing abnormal.

20*th*. She was taken to the Milwaukee Hospital, and, with the assistance of Drs. E. J. Kelley, N. M. Black, and Edward Schulz, the growth was removed by Dr. H. V. Würdemann under chloroform anæsthesia. An incision was made through the fold of the upper lid, the fibres of the elevator caught with a thread, and reunited after removal of the growth. The tumor seemed to originate from the orbital portion of the

frontal bone, was subperiosteal, and extended back and outward from the margin of the orbit about 20 mm. It was of a dark color, cystic, and friable in character, and broke down in the removal. It contained a blackish fluid mingled with débris of degeneration. Denuded bone was exposed by the probe. All of the growth was removed, the surrounding parts curetted, and tube drainage inserted. The wound healed rapidly, and in two weeks the eye regained its normal appearance and position. The exophthalmos and strabismus entirely disappeared. Microscopical examination showed the growth to be a nuclear neoplasm, probably a sarcoma.

December 10th. The child was again brought to the office by Dr. E. J. Kelley, with the eye protruding even more than when first seen, with an enlargement at the left temporal prominence and one in the upper temporal portion of the right parietal bone. The right hypogastrium protruded, and on physical examination a tumor was found in this region, which at the time was believed to be a metastatic growth in the

FIG. 2.



Condition of patient January 1, 1898.

liver. She was reduced in weight, and had a decided cachectic look. Neither eyeball was inflamed, and, as far as we could judge, there were

no purely ocular symptoms, except exophthalmos and a bruit, appreciable by the stethoscope when applied over the eye. The vision of both eyes was seemingly the same. Ophthalmoscopic examination was negative in the right eye; in the left tortuosity of retinal veins was seen. No history of diplopia was obtained. An unfavorable prognosis was given, and the parents were told that the tumors were inoperable and advised to send the child to the Milwaukee Children's Hospital. This advice was not followed until December 24th, when Dr. Würdemann was called to the house, where he found the child in a deplorable condition, not having been able to retain any food for nearly a week.

25*th*. The patient was taken to the Milwaukee Children's Hospital. Weight about thirty pounds; pulse 120; temperature 99.6°. She was put upon rectal feeding with peptonized milk, three ounces every four hours, preceded by copious injections of sterilized water. Absolutely no food was given by mouth until December 28th. Pulse decreased to 100; temperature to normal. She was kept in bed for two days; on the 28th, dressed and allowed to sit up. Was most comfortable curled up in a large chair or sitting on haunches on the floor. The mental condition was that of an average child. The weight on December 27th was thirty and one-half pounds. The blood-count showed the proportion of white corpuscles to the red normal, the red being lowered in number (3,500,000); hæmoglobin 80 per cent.; urine normal.

30*th*. Iodide of potash, 0.30 gramme three times a day, in milk, was given and kept up for a month. All nourishment was taken by the mouth, and there was a gradual improvement in appearance and general health, although there was gradual enlargement of the tumors.

January 1, 1898. The temperature varied from 98° to 99.5°; pulse 100 to 120; respirations 25.

3*d*. Muscular cramps appeared in both legs, coming on at intervals during three days, but these gradually disappeared. During the remainder of the month the patient was up and dressed. Complained of no pain or irritation from the light, and could see with the affected eye. Noticed everything going on around her; sat in same position above mentioned; had a good appetite, being on general diet.

February 10*th*. Her weight was thirty-two pounds, the increase in weight being largely due to the increase of the abdominal tumor. The abdomen was very much distended; the arms and legs very thin. She still noticed everything going on about her; played with her dolls, and could walk. She refused solid food, but would take milk and ice-cream in small quantities. Vomited easily, food coming up unchanged. Irritation of skin of abdomen. The left eyeball had been inflamed several days, the vitreous first becoming turbid, then the cornea opaque, and speedily softening, due to lessening of the nutrition from pressure of the tumor. From this time on an occlusive dressing, moistened with 25 per cent. glycerin solution, was kept on the eye.

12*th*. Was much weaker, remaining in bed. Most comfortable when lying on the left side, curled up, with the head nearly to the knees. Temperature 98° to 99°; pulse gradually increased, 120 to 130. Great increase in tumors.

17*th*. Weight thirty-three and one-quarter pounds, due to increase of abdominal growth.

19*th*. Very much weaker; noticed but little, and refused food.

20*th*. Took food by mouth, eating meat, drinking milk, and playing

with dolls. Gradual decrease of vitality. Mental condition unchanged. Pulse regular and steady, 120.

FIG. 3.

FIG. 4.

Condition of patient February 10, 1898, showing implication of the cervical lymphatic glands.

23*d*. Slept well previous night, no pain, and took nourishment. Mental condition unchanged; asked for milk and bread and to go down-stairs. After a bath was tired, and said she would rather remain

in bed. 9.30 A.M. direct change came. Lapsed into unconsciousness, breathed shortly and quickly, with rattling noise in the throat. 10 A.M., breathing more quietly, pulse weaker, convulsive spasms occurred, which gradually grew weaker. Death at 11.45 A.M., February 23, 1898.

FIG. 5.

FIG. 6.

Post-mortem Examination. February 23, 1898, at 4 P.M., post-mortem examination was made by Drs. Würdemann and Black. The case being a *cause célèbre*, a number of other physicians were present by invitation.

The following report of the pathological appearances has been made by Drs. N. M. Black and S. H. Friend:

External Examination. Female, aged five years, eleven months; height three feet ten inches; weight of body, thirty-five pounds. Post-mortem discolorations on neck and back. Body poorly nourished. The color of skin yellow. The arms and legs as thin as pipe-stems. (Fig. 6.)

Head. A tumor the size of an egg on the left frontal prominence. Tumor about the size of an orange on right parietal bone, near the superior junction of the parietal and frontal bones. The left eye is pushed forward by a tumor, the size of a lemon, between the commissure of the lids 5 to 8 cm. (Figs. 5 and 7); the bloodvessels deeply

injected and ecchymosed; the cornea and conjunctiva broken down. The lids of the right eye are ecchymosed.

Abdomen. Protruding from within the abdomen is a tumor filling a part of the right hypogastrium, the entire epigastrium, almost the

FIG. 7.

Figs. 5, 6, and 7, show the condition of the patient February 17, 1898.
Figs. 5 and 7 show further development of the orbital and cranial tumors. Fig. 6 markedly shows the enormous increase of the abdominal tumor and the progressive emaciation.

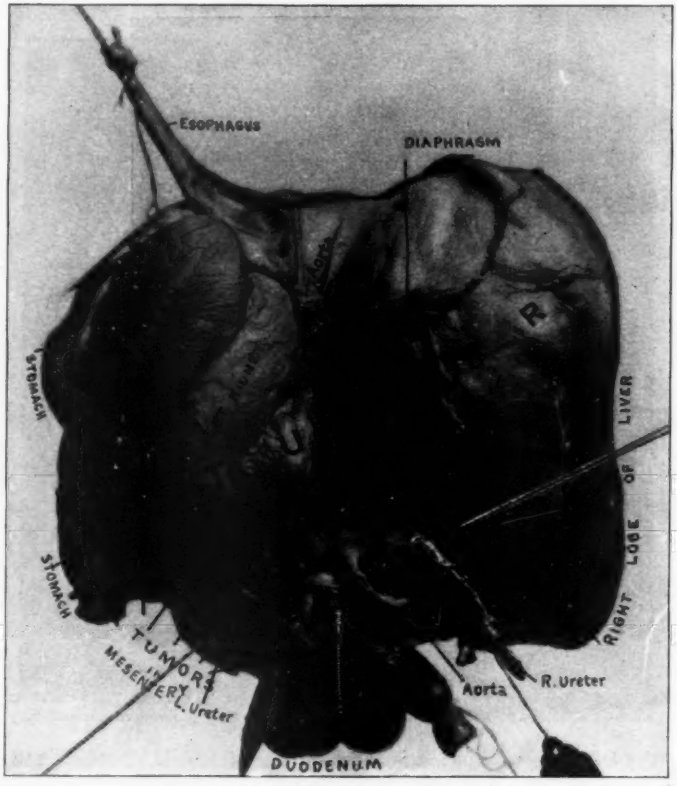
entire left hypogastrium; it is about the size of a child's head (Fig. 6) Within the right hypogastrium the tumor extends as high as the fifth rib in the nipple line.

The Thoracic Cavities. The lung, heart, and large bloodvessels show nothing abnormal. The right half of the diaphragm is pushed upward by the growth.

The Abdominal Cavity. The left kidney occupies a normal position; is of a light reddish-brown color. The capsule is non-adherent. Section of the organ shows no abnormality. Weight, seventy grammes. The right kidney lies lower than normal, embedded in an enormous mass of tumor. The tissue surrounding the kidney is firm on pressure and lobulated. The kidney is with difficulty detached from this firm mass. The superior surface of the kidney contains two indented facets produced by pressure of the surrounding growth. The surfaces of these

facets are of a reddish-brown color, indicative of blood extravasation. The remainder of the kidney is of a normal color. Weight, sixty grammes. The capsule of this kidney, with the exception of the anterior portion, is involved in the growth.

FIG. 8.

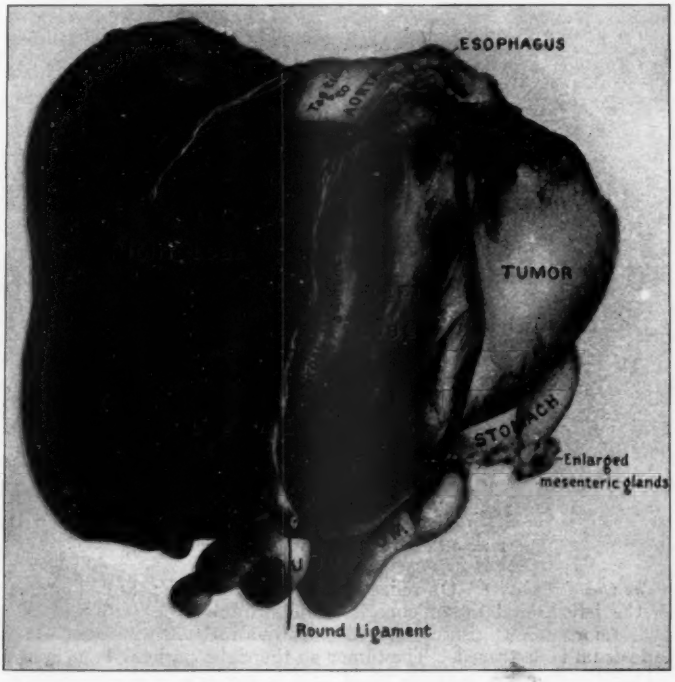


Posterior view of abdominal viscera and tumors.

The suprarenal capsule is enlarged to about ten times its normal size and tightly adherent to the neoplasm. In attempting to separate the capsule from the growth the finger entered a cavity from which a chocolate-colored blood fluid oozed. The spleen is pushed upward, yet appears normally attached. The color and consistence of the organ normal. Weight, forty-five grammes. The ilium, jejunum, and large intestines show no abnormalities. The upper border of the transverse colon lies on a level with umbilicus. The mesenteric glands are all enlarged. The pelvic organs are normal. The liver, stomach, duodenum, pancreas, and the neoplasm, with some mesenteric glands and the aorta, massed

together. The liver is flattended upward against the diaphragm, pushed by the attached neoplasm. The amount of liver-tissue present is about the size of two adult hands, the outer surfaces pressed together. Its thickest portion measures about 3 cm., and from that depth tapers to 1 cm. at the edges. The weight of the liver, detached, is 450 grammes.

FIG. 9.



Anterior view of abdominal viscera and tumors.

The main neoplasm, covered by the peritoneum throughout its entire extent, continues into the liver. The entire neoplasm weighs 1660 grammes. The growth throughout the entire extent is lobulated; attached to 4 cm. of the posterior wall of the gall-bladder; to the superior border of the lesser curvature of the stomach; to the mesenteric border of the duodenum, and to the connective tissue surrounding the aorta. The gall-bladder contains a small quantity of grayish-colored fluid. The duct is patulous. A lobule of the neoplasm pushes the gall-bladder upward and to the right. The common duct is elongated and passes around over the anterior portion of the growth between two lobules, to reach the duodenum, and enters at the normal point, 10 cm. from the pyloric end of the stomach. The tissues of the gall-bladder are not involved.

The walls of the stomach and duodenum not thickened. The pancreas lies in its normal position, pressed upon by the neoplasm and enlarged mesenteric glands. The organ, much enlarged, weighs thirty grammes. A cyst containing a whitish semi-fluid is connected with its head.

FIG. 10.

Inferior view of abdominal viscera and tumors.

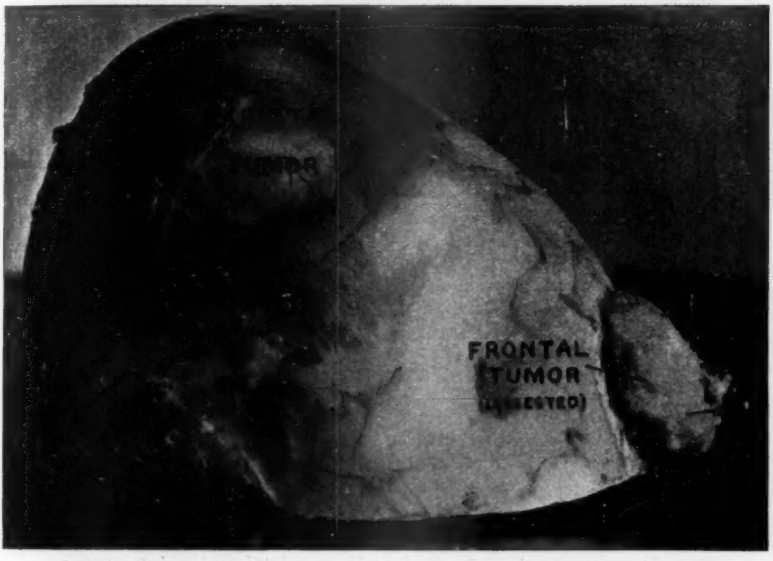
The Cranial Cavity. On reflecting the scalp from the skull the tumor on the left frontal prominence is found firmly attached to the scalp. The tumor, of a whitish color, is also firmly attached to the bone. The periosteum is destroyed. The tumor on the right parietal bone is of a reddish-brown color, contains blood, and is covered by the periosteum. (Fig. 11.)

The calvarium was removed with difficulty, as firm adhesions were present. Both tumors are attached to the outer surface of the dura. The tumors at the surfaces indicated have destroyed the bone tissue. The outer layer of the dura mater is thickened, and grown to it are parts of the tumors, corresponding to the location of the calvarium tumors. The inner layer of the dura is smooth, glistening, and not involved. (Fig. 12.)

The superior, lateral, and posterior surfaces of the cerebral hemispheres are symmetrical in shape; the convolutions rather large. At the anterior base the gyrus rectus, lobus olfactorius, and gyrus frontalis inferior are destroyed and softened on the left side as far as the fissure of Sylvius and 2.5 cm. into the frontal lobe. The gyrus rectus and lobus olfactorius are pushed aside and partially destroyed on the right side. A tumor is firmly attached to and involves the roof of the

left orbit and dura mater. The tumor is of a reddish-black color at the upper parts and a dirty white at the base; it measures 2.5 cm. in height, 6 cm. in length, and 3.5 cm. in width, filling part of the left anterior cranial fossa, and encroaches on the median line, causing the destruction of brain matter above described. Section shows the upper part of the tumor filled with pus and blood. The remainder of the base of the brain is normal. Pia mater is glistening, the vessels not distended; it is destroyed at the base over the tumor on the left side. On section the brain-substance is found to be normal except as noted. The bones

FIG. 11.



Exterior of anterior portion of cranium, showing frontal and parietal growths.

forming the floor of the left orbit are partially destroyed by the involvement of the tumor. The right eye and orbit are normal, except for extravasation of blood into the cellular tissue of the eyelids. A grayish-white tumor, the size of a walnut, fills the orbit and surrounds the left eyeball; the sclerotic and retinal tissue is thickened; the optic nerve is enlarged. (Fig. 13.) The lachrymal gland is ten times its normal size and of reddish black color.

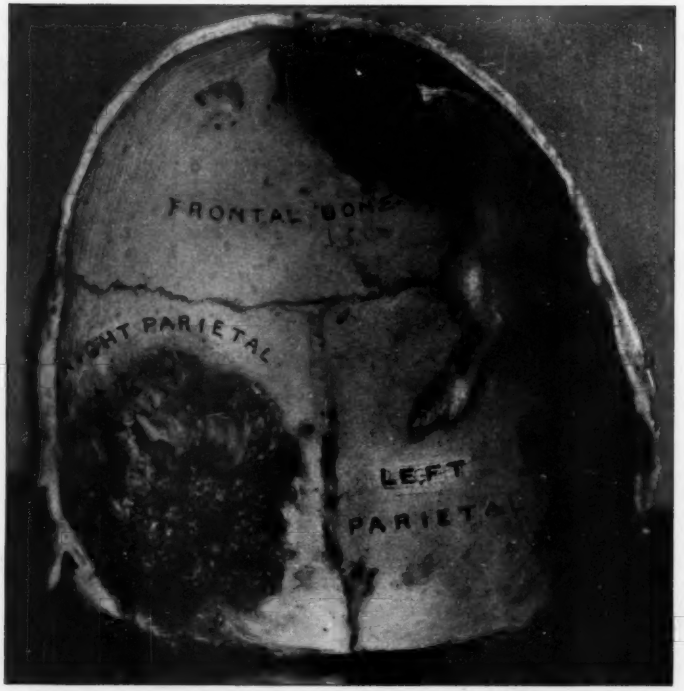
Microscopical Examination. The following report of the microscopical examination is made by Dr. S. H. Friend:

The tissues were prepared by being hardened in a formalin solution and stained with Bismarck brown. The following sections show a typical small, round-celled nuclear tumor, commonly known as angiosarcoma:

Tumors of the kidneys, liver, orbit, over frontal and parietal prominences and in brain. Kidneys, pancreas, mesenteric glands, and spleen

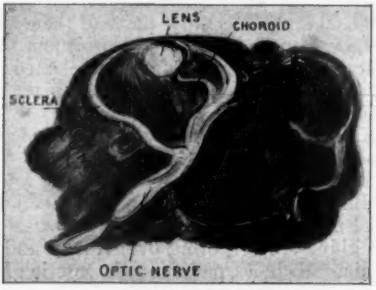
are infiltrated with the nuclear cells. Capsule of the kidney not involved contains the cells. Areolar tissue surrounding the kidney is one

FIG. 12.



Interior of anterior portion of cranium, showing extensive destruction of bone from infiltration with tumor cells; also localized pachymeningitis.

FIG. 13.

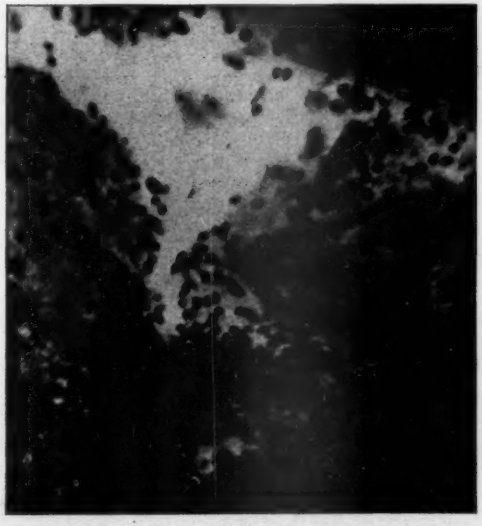


Tumor of orbit enclosing eyeball.

FIG. 14.

Microphotograph of section from orbital tumor. ×160.

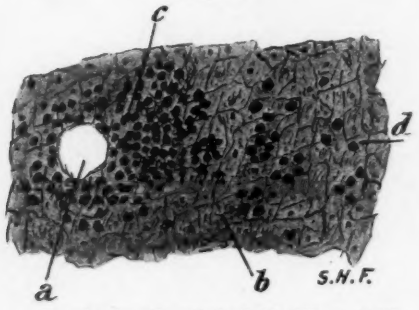
FIG. 15.



Microphotograph of section from large abdominal tumor, showing infiltration of liver. ×160.

sarcomatous mass. Suprarenal capsule infiltrated. Liver shows the gradual destruction of normal tissue by the cells. Tumor of frontal sinus is of the same general character. Sclerotic and retinal tissue is filled with the cells. The optic nerve shows an interesting process: In the fibrous sheath and myelin matter the cells are found in nests and scattered. The tumors on bones of the head are similar to those elsewhere, and the medullary substance of femur and other long bones is infiltrated.

FIG. 16.



Drawing from tissue back of right kidney. × 160.

This illustrates angiotic nature of the neoplasm. *a*. Artery. *b*. Cells of surrounding tissue. *c*. Sarcomatous cells around vessel. *d*. Eccentric sarcomatous cells.

The tumor on the left frontal prominence shows the beginning of the metastatic process. The medullary bone layer is entirely destroyed. Growing from this layer the nuclear cells are pushed outward and inward through both tables of the skull, partly destroying the bone plates.

The growth involves the periosteum and outer layer of the dura mater: (1) by the formation of lymph-glands, and (2) by the infiltration of nuclear cells. The tumors on the parietal bone and the tumor in the kidney particularly show the angiotic character of the neoplasm. (Fig. 16.)

DIAGNOSIS. The clinical evidence and reasoning from the literature of metastatic orbital sarcoma indicate that in our case the sarcomatous tissue originated in the orbit; the metastasis proceeding by means of the bloodvessels, and developing first in those tissues supplied by the portal circulation, the focus of the visceral neoplasm being in the connective tissue back of the right kidney, from which it extended by infiltration and by metastasis into the liver and other organs. The tumors of the frontal and parietal bones and within the cranial cavity were doubtless metastatic and secondary to that of the orbit. The tissues of the surrounding parts became involved through infiltration. The angiomatous nature of the new tissue favored rapid growth and metastasis, and insured the lethal termination. Microscopical examination of many prepared slides shows similar neoplasmic cells, the arrangement

of which in certain portions of the tumors show that the growth is an angiosarcoma.

Remarks. Some of the remarkable clinical points in our case were the fairly good cerebration and absence of paralysis, despite the extensive involvement of the skull and of the brain membranes; the tumor in the right anterior cerebral fossa had completely destroyed the olfactory nerve, and that of the left side of the frontal bone had seriously affected the anterior portion of the left cerebrum; the localized pachymeningitis over the motor area of the right side had given rise to no serious lesion of motility. Such a case as this almost seems to set aside our much-vaunted methods of cerebral localization. The continuance of function of the kidneys, liver, spleen, and other abdominal organs, despite the extensive involvement of other structures and the mechanical impediment to other functions from pressure of the large abdominal tumor, is indeed remarkable.

Morton[24] reports a case of primary sarcoma of the orbit which had some characteristics similar to our case as regards the lesions in the head. There was no history of traumatism; examination showed proptosis; the anterio-posterior axis of the eye was deviated outward and its motility restricted. The cornea was clear, the iris normal, the pupil small, but responsive to stimuli. There was no marked bulbar injection or chemosis. The lids were red and swollen; not much pain, but sense of fulness and discomfort. The growth was rapid and invaded the antrum, nose, ethmoidal and sphenoidal sinuses, nasopharynx, and anterior cerebral fossæ. The eyeball was removed, the patient dying within a few weeks afterward. Post-mortem examination showed that the facial sinuses were infiltrated, the horizontal plates of both superior maxillary bones eaten away; the tongue was invaded, and the entire buccal cavity on the left side was filled; the anterior plate of the antrum cavity was gone; the bony roof of the orbit was eaten away, and the tumor pressed on the frontal lobes of the brain; the tumor mass passed through the post-nasal space into the brain; the liver and other organs were normal. The microscopical examination showed an atypical cartilage rich in cells, irregularly arranged; the cells grouped closely together and mingled with round, mononucleated cells, about the size of white blood-cells. The vessels were numerous, large, and thin-walled, and in some regions the arrangement was cavernous. A diagnosis was made of chondrosarcoma. This description, however, seems to the authors more adapted to angiosarcoma.

Willoughby's case[38] had similar abdominal characteristics to ours, and although there was no orbital involvement, it may be quoted in this relation. In a young adult who had died from multiple sarcomata the necropsy showed the abdominal cavity filled with a number of rounded growths attached to the omentum, mesentery, and peritoneum,

many thousand in number, varying in size from small seeds up to one large growth on the gall-bladder, about the size of a cocoanut. There were a few small nodules in the liver, otherwise the growths were confined to the serous membranes and did not extend into the organs. A secondary growth appeared in the scar in one of the paracentesis operations which had been made in the thorax; the pericardium and heart were not implicated. There were secondary growths in the loose tissue over the ribs and above the heart, and the pleuræ were covered with growths. There was slight invasion of the base of the right lung; the diaphragm was covered with growths on each surface. Microscopically the growths consisted of small round-cells. The interesting points in the case were the nearly complete restriction of the growths to the serous membranes. Particularly interesting in relation to our own cases was the non-interference of the growths with the action of the various organs, and hence the absence of many symptoms which might have been expected.

Eshner[14] reports a case of multiple sarcoma in an infant where the kidney was primarily invaded. This was attended by secondary growths in the liver. He states that renal involvement in sarcoma is more common in the first months or years of life, and may be apparent at birth. The tumor is usually unilateral with round or spindle or polymorphous cells.

References to recent literature pertinent to the subject of this article are appended.

RÉSUMÉ. When sarcomatous neoplasms are found in the orbit or adjoining cavities of the head, this region is the primary place involved in the disease, and when metastasis occurs in the abdominal cavity the visceral structures are secondarily affected. These tumors likewise infiltrate the tissues of adjacent regions.

The diagnosis of orbital sarcoma, particularly when attended by metastasis, is usually made too late to save the life of the patient by any operation. When metastasis has occurred, removal of the primary focus or of the secondary growths will not prevent recurrence, although in some instances life may be prolonged. By this time important structures have been implicated through metastasis or infiltration, the involvement of which causes death.

The angiotic form of orbital sarcoma is prone to metastasis, and is fatal from its inception.

BIBLIOGRAPHY.

(Recent literature bearing upon angiosarcoma and multiple-metastatic sarcoma, particularly of the orbit.)

I. ANGIOSARCOMA.

1. Cavazzani, T. Contributo allo Studio dell' Angio-Sarcoma. Rio Veneta di Sci. Med. Venezia, 1897, xxvi, 405–424, 1 pl.

2. Hodenpyl, E. Tubular Angiosarcoma. Proc. New York Path. Soc., 1891–92, p. 21.

3. Kolaczek, J. Ueber das Angio-Sarkom. Leipzig, 1877.
4. Kumberg, I. I. Angio-Sarcoma of the Orbit. Vayenno Med. Journ., St. Petersb., 1898. xxci., med. spec. pt. 39–45.
5. Lucken, F. Ueber Angio-Sarkom. Deutsche Med. Wochenschr., Leipzig, 1891, xxii. 1189.
6. Senn, N. Pathology and Treatment of Tumors.
7. Sventsitski, V. A. Contribution on Angio-Sarcomata. Laitop. russk. Chiv. St, Petersb., 1896, i. 854–856.
8. Von Hippel, R. Beitrag zur Casuistik der Angio-Sarkoms. Beitr. z. path. Anat. u. z. Allg. Path., Jena, 1898, xiv. 370–400, 1 pl.

II. Multiple-metastatic and other Forms of Sarcoma.

9. Bozzolo, C. Sarcomatosi cutanea e Viscerale, diffusa al Cervello. Gior. d. r. accad. di med. di Torino, 1897, 3 s. xiv. 13–16, 1 pl.; also Settimana med. d. Sperimentale Firenze, 1897, ii 19–21.
10. Brainerd, I. N. Sarcoma of the Antrum, Orbit, and Neck. Trans. Mich. Med. Soc., Detroit, 1893, vol. xvii. p. 206.
11. Calucci, G. Lymphoe-Sarcoma, bi-laterale dell' Orbita. Giov. d. Ass. Napol. di med. e vat., Napoli, 1898, viii. 107–119.
12. Cohn, I. E. A Case of Multiple Sarcoma. Journ. Cutan. Genito-Urin. Dis., New York, 1892, vol. x. pp. 393–395.
13. Dalziel, T. K. Repeated Operation for Recurrent Sarcoma. Glasgow Med. Journ., 1898, vol. xlix. p. 183.
14. Eshner, A. A. Multiple Sarcoma in an Infant. Phila. Polycl., 1897, vol. vi p. 253.
15. Ewetzky, T. Weitere Studien über intra-oculare Sarkome. Arch. f. Ophth. Leipzig, 1898, xlv. 563–612.
16. Geraty. Multiple Sarcomatous Tumors. Lancet, London, 1892, vol. i. p. 260.
17. Glaeser, A. Mit recurrirendem Fieber verlaufende multiple Sarkomatose. Allg. med. Central-Ztg. Berl., 1897, lxvi. 601–603.
18. Havas. Zwei Fälle des idiopathischen multiplen Pigment-Sarkom. Pes. med. chiv. Presse. Budapest, 1893, xxix. 250.
19. Jackson, J. I. A Case of Idiopathic Multiple Pigmented Sarcoma (Kaposi type). Brit. Med. Journ., London, 1897, vol. ii. pp. 866–868.
20. Jacobi, M. Multiple Sarcoma. Arch. Pediat., New York, 1893, vol. x. pp. 60–62.
21. Kaposi, M. Sarcomatosis Universalis. Tod. Jahrb. d. Wien. k. k. Krankenanst, 1895. Wien u. Leipzig, 1897. iv. pt. ii. 133.
22. Kobner. Idiopathisches multiples Sarcoma hæmorrhagicum. Verhandl. d. X internat. med. Cong., 1890. Berl., 1891, iv. 13 abth., 39–41.
23. Macdonald, W. G. Four Cases of Sarcoma presenting some Unusual Features. Albany Med. Ann., 1893, vol. xiv. pp. 65–70.
24. Morton, H. McI. Primary Sarcoma of the Orbit. New York Med. Journ., April, 1896.
25. Pischel. Ein Fall von Tumor der Orbite. N. Y. med. Monatschr., 1898, x. 248.
26. Small and Large Round- and Spindle-celled Sarcoma. Proc. New York Path. Soc. (1890) 1891, pp. 67–71.
27. Read, R. H. A Case of Sarcoma. Columbus Med. Journ., 1895, vol. i. pp. 854–856.
28. Ried, T. Pigmented Sarcoma in its Early Stages. Trans. Glasgow Path. and Clin. Soc. (1886–91) 1892, vol. iii. p. 196.
29. Roncali, D. B. Sur l'Existence des Levures Organisées dans les Sarcomes. Ann. de Microg., Paris, 1896, viii. 449–461.
30. Sherwell, S. Multiple Sarcomata. History of a Case showing modification and amelioration of symptoms under large doses of arsenic. The American Journal of the Medical Sciences, Phila., 1892, N. S., vol. civ. pp. 443–449.
31. Start, B. Ueber das Sarkom und seine Metasten. Berlin, 1877.
32. Stirling, A. W. Sarcoma of the Orbit. Ophth. Rec., 1898, vol. vii. pp. 331–336.
33. Swanzy. Diagnosis of Neoplasms of the Orbit.
34. Report of a Case of Multiple Sarcomata in an Infant. Univ. Med. Mag., Phila., 1890–91, vol. iii. pp. 387–393.
35. Webster, D. Sarcoma of the Orbit. Medical News, New York, 1898, vol. lxxii. p. 271.
36. Wietschur, A. Zür klinischen Diagnose des Sarkoms der innere Organe. St. Petersb. Med. Wochenschr., 1892, N. F., ix. 121–125.
37. Whittaker, J. T. Sarcoma: Its Pathology and Treatment. Cincin. Lancet-Clinic, 1897, N. S., vol. xxxix. pp. 517–523.
38. Willoughby, W. G. Case of Multiple Sarcomata, Practically Confined to the Serous Membranes in a Young Adult. Death. Necropsy. Lancet, London, 1896, vol. ii. p. 810.

39. Winocauroff. Zür Lehre von der Sarkomatose; multiples Sarkom der inneren Organe bei einen 12 jährigen Knaben. Arch. f. Kinderh., Stuttgart, 1896, xxi. 203–208.
40. Withington, C. F. Cases of Multiple Sarcoma. Med. and Surg. Rep. City Hosp. Boston, 1892, pp. 201–222.
41. Würdemann, H. V. Illustrative Cases Showing the Indications for Enucleation of the Eyeball with Macroscopic and Microscopic Photographic Illustrations from Specimens. Ann. Ophth., October, 1897.

A CASE OF GLIOMA OF THE LOWER CERVICAL REGION OF THE SPINAL CORD PRODUCING A TOTAL TRANSVERSE LESION, IN WHICH THERE WAS SPASTICITY OF THE LOWER LIMBS AND PERSISTENCE OF THE DEEP REFLEXES.[1]

I. A STUDY OF THE TUMOR AND SOME OF THE PHENOMENA PRODUCED THEREBY.

By W. H. Hudson, M.D.,
of Lafayette, Ala.

II. A STUDY OF A PECULIAR FORM OF DEGENERATION (DEGENERATIO MICANS) MET WITH IN THIS CASE.

By Lewellys F. Barker, M.D.,
associate professor of anatomy, johns hopkins university.

III. SOME POINTS IN THE PATHOLOGY OF SYRINGOMYELIA.

By Simon Flexner, M.D.,
professor of pathological anatomy, johns hopkins university.

I.

The patient, who first came under my charge from August to November, 1890, was a man, aged fifty years, whose family and personal history was free from any record of either syphilis or tuberculosis. Six months previously he had been thrown from a horse, striking on his shoulders and neck, and to that injury he attributed his symptoms, which then consisted chiefly of pain along the spine from the dorsal region downward and burning in the legs and feet. The knee-jerks were exaggerated; he swayed when standing with the eyes closed. He grew slowly worse on mixed specific treatment; passed from my care, and I did not see him for six years. During this time he had repeated "dysenteric" attacks, and early lost power in the legs, these members having become almost entirely helpless in 1891 and, finally, completely so in 1895. By this time sensation had become lost as high as the nipple line. He had never had the excruciating pain common in spinal tumor,

[1] On account of the length of the original contribution it was considered advisable to publish it in this Journal in abstract.
The paper has been published in full in the form of a monograph, which will be sent to those interested in the subject, upon request to Dr. W. H. Hudson, La Fayette, Ala.

but there had been moderate pain along the spine and a well-marked girdle pain. The slightest irritation caused violent spasmodic contractions of the muscles of the legs, these contractions and the burning pain of which he complained being increased by the use of strychnine. When seen in December, 1896, his stomach was very unretentive, vomiting having begun some time before after indiscretion in diet.

At this time he was dyspnœic, and his breathing was entirely diaphragmatic. He was generally free from suffering, but rotation of the head caused pain in the right arm and neck. His pupils were small and reacted imperfectly. Sensation in all parts was lost below the third rib in front and the spine of the scapula behind. Above this there was some hyperæsthesia. The legs were rigid and entirely paralyzed. Muscular atrophy had not occurred except in the interossei of the hand, and there were no destructive trophic changes.

The skin reflex was present in the legs and feet; there was violent ankle clonus and some exaggeration of the knee-jerks. The cremasteric and epigastric reflexes were lost. There was neither rigidity nor deformity of the spine.

An intradural tumor was believed to be present, and this was thought to be probably intramedullary. The thought of operation was entertained, but the patient died within a few weeks and before it was possible to operate.

I was allowed to remove the spinal cord in part only, but obtained the portion reaching from the level of the fourth cervical to that of the third dorsal vertebra. The upper five centimetres of this consisted chiefly of a tumor reaching nearly throughout the whole lateral extent of the cord and ending above and below in two cone-like projections, one of these being continued downward in the form of a central stem of what appeared to be gliomatosis. This stem was surrounded by softened cord. The general form of the tumor and of the stem of gliomatosis and the cavities in the mass seen upon making a series of sections are well shown in Plate I. Microscopical examination showed that the tumor formation involved nearly the whole cord—a mere rim of nerve-fibres surrounding it, and these showed marked degeneration posteriorly and a lesser amount anteriorly. Some ganglion cells remained, chiefly in the anterior horns; most of them, however, were degenerated. The tumor consisted of a very large number of much thickened bloodvessels, many of which showed hyaline degeneration, fibres, and of cells which were round, oval, or pyriform in shape. They were somewhat irregularly arranged, but often appeared to radiate from the bloodvessels. These appearances are more fully discussed by Dr. Flexner. In many places there were blood extravasations. The stem of gliomatosis contained large numbers of the peculiar bodies, which will be more completely described by Dr. Barker. Smaller numbers of them were found

in the tumor mass also, and I believe it is probable that they play a part in the formation of the cavities, owing to the degeneration which is going on in them, though some of the cavities appear to be the result of extravasations, and, perhaps, of the obliteration of many small blood-vessels.

The curious bodies mentioned often resembled ganglion cells, and are likely to be mistaken for them, and I believe this was done in the case reported by Turner and Mackintosh,[1] in which they believed that they found ganglion cells in an area similar to the central gliomatosis in my case. I believe from my study of them that some of them were degenerated bloodvessels, and others probably degenerating glia-fibres (in the sense of Weigert); but most of them appeared to be degenerated bipolar cells. I think that in their nature the bodies are entirely similar to those found by W. Rosenthal[2] in a neuro-epithelioma of the spinal cord. He believes that they are degenerated glia-fibres (in the sense of Weigert), but in a letter to me states that he believes the bodies observed by each of us are quite similar.

This case came under my care for advice as to the propriety of operation, and had the patient's general condition allowed of it I would have operated. Surgery alone offers the only hope of relief in cases of spinal tumor, and although intramedullary tumors are incurable, even by surgical methods, I believe that in case there is any doubt as to whether the tumor is within the substance of the cord the rule should be to operate, and even when the mass is certainly intramedullary I see no reason why an operation undertaken purely for the purpose of relieving pressure would not be quite as justifiable as in cases of cerebral neoplasm, and I believe the result would be relief of suffering and prolongation of life. As to the reflexes: Undoubtedly from the appearance of the tumor and of the softened cord below there was a complete transverse division of the cord, and this certainly occurred some time previous to the man's death. Until very recently it has been thought that a total transverse lesion of the cord above the lumbar enlargement always produced increase of the deep reflexes and spasticity of the legs if the lumbar enlargement was healthy. Gowers, in a recent personal communication, states that he still holds to this opinion, and believes that in those cases in which the reflexes are lost there has been enough excitation to interfere with the function of the cells in the lumbar enlargement.

On the contrary, Bastian and Hughlings-Jackson believe that the cerebellum has an enforcing influence on the reflexes, and that if all connection with the brain is cut off the reflexes are permanently and entirely abolished. There has been much discussion of the question.

[1] Brain, 1896, Parts II. and III.

[2] Ziegler's Beiträge, 1898, Band xxiii., Heft 1.

Gerhardt[1] has published a case which he believes destroys the view of Bastian, while Bruns[2] has offered the record of the most reliable case that showed loss of reflexes without demonstrable disease of the lumbar enlargement or adequate changes in the nerves or muscles. I believe that my case is conclusive proof that the reflexes may remain when the cord is completely severed, if the lumbar enlargement is healthy, for in this case there was slow progress without sufficient irritation or circulatory disturbance to cause lumbar changes.

In a case to be published in the future I have observed very extensive destruction of the cerebellum by a cyst, and in this case the reflexes returned soon after evacuation of the cyst and before the patient showed any indication of resumption of the cerebellar functions. I believe, therefore, that we may conclude: That the cord may be intact and degeneration in the lumbar enlargement, nerves, and muscles absent, and yet the reflexes may be lost; that the cerebellum in the human subject may be largely destroyed and wholly inactive functionally, and yet the reflexes may persist; that the spinal cord may be entirely severed in the upper dorsal region, and spasticity of the limbs and preservation of the reflexes may still be noted; that the rigidity of the paralyzed limbs is not due to the "unrestrained" (Bastian) or "unantagonized" (Hughlings-Jackson) influence of the cerebellum passing downward to the spinal cord; that the spinal cord is the centre of the deep reflexes, and also has within itself the power of producing spasticity.

It would seem that shock from injury and severe disease may destroy for all time the power which produces the reflexes, and that the loss of the deep reflexes is produced by further causes than the total division of the cord, the cutting off of the normal influence of the cerebellum or cerebrum, or a combination of these.

II.

About the slit-like cavity in the centre of the stem of gliomatosis there is a hard tissue, which is darker in color than that in the main portion of the tumor, and with moderate magnification it becomes evident that the deep color is due to the presence of particles, which, in unstained preparations, look yellow, while the background appears paler. A few of these particles are seen in many portions of the tumor, but by far the greater number are arranged about the cavity in the stem of gliomatosis. Certain of them are undoubtedly blood-vessels, but there is no question that many are not, for they are more refractive and much more irregular in shape, commonly showing a long body, very thin at one end and thicker at the other. They are

[1] Deutsch. Zeitsch. f. Nervenheilkunde, 1894, Band vi., pp. 126–136.
[2] Archiv f. Physiatrie, vol. xxv. pp. 1 to 72.

usually of the shape of a pear or a screw. With a magnification of 500 diameters the tissue about the cavity is seen to be composed of cells and fibres embedded in a granular mass, resulting from precipitation of an albuminous fluid, the chief constituents of the tissue being spindle-shaped fibres, of varying length and breadth, with eccentric nuclei, the fibres being really the protoplasm of much elongated bipolar cells. There are great numbers of granules of very minute size up to 40 μ, which represent cross-sections of fibres of different thicknesses, which are much twisted and curved; the main portion of the mass is then a dense felt-work of cells and their prolongations. It is possible that some fibres are not processes of bipolar cells, but are glia-fibres (in Weigert's sense).

The particles previously mentioned are found within the bodies of the cells, and consist of collections of waxy-looking material, apparently the result of degeneration of the protoplasm. Sometimes they are arranged in rows, as if they were the result of transformation of longitudinal fibres in the protoplasm. They are variable in shape and size, the large particles being more refractive and yellower than the smaller, and the latter seem to be an earlier stage of the degeneration. Sometimes they seem to occupy the whole of the cell.

Water has no effect upon them. They resist the action of cold nitric acid for a long time. They are more resistant to caustic potash than all the other elements of the tumor, but finally dissolve—much sooner than myelin, and, unlike myelin, they lose their lustre when acted upon by KOH. Lugol's solution stains them reddish-brown, a subsequent addition of 25 per cent. sulphuric acid causing little change. With the Weigert-Pal staining method (Plate III., Fig. 4) they appear black, the various arrangements which they may assume being seen in the figures. The illustrations also show the pale, refractive protoplasm of the cells and the very light areas that sometimes surround the particles. This degeneration is seen chiefly in cells about the cavity in the stem of gliomatosis, but also elsewhere in the tumor, and even on the white and gray matter of the cord outside of the tumor. There is no doubt that the fibres are portions of the protoplasm of bipolar cells, and in some areas the individual cells may be made out. Counter-staining by van Gieson's method after using the Weigert-Pal method leaves some of the masses stained with acid fuchsin, especially those toward the periphery of the cells. The particles hold acid fuchsin much longer than the rest of the tissue when differentiated with picric acid after using Altmann's aniline fuchsin. The same is true of van Gieson's stain used alone. If the differentiation in this method is pushed they become bright yellow. Iron-hæmatoxylin stains them slate-gray or blackish-gray.

Rosenthal has described a degeneration which, in general appear-

ance and in staining reactions, closely resembles this; but there is the fundamental difference that he could trace no connection with the cells, while in Dr. Hudson's case the relation is clear. In some portions the glia-fibres show the degeneration, however, and the method of preservation precluded the use of Weigert's glia stain; and I believe that the two processes are identical. For simplicity in describing the condition I would suggest the term "Degeneratio micans," or, if preferred, "Rosenthal's degeneration," since he first described the specific staining reactions.

III.

The description of the tumor which I will give is intended to supplement that presented by Dr. Hudson. It will refer to (*a*) the cells composing it chiefly; (*b*) to the bloodvessels; (*c*) to the relation between the cells and vessels, and (*d*) to the cavities. The cells are not regularly arranged, but exist in masses, the smaller collections being about the bloodvessels. The cells are oval or nearly round; sometimes irregular or pyriform, and present one or more processes. They are separated by an intercellular substance consisting of delicate fibrils, the amount of the intercellular substance varying in different parts. The cells have an interesting relation to the bloodvessels. In one variety of appearance the vessels are enclosed by fibrils; in another by cells, though even in the latter a narrow line of fibrils exists between the cells and the vessel. When the cells are removed somewhat from the vessels the latter are surrounded by a radial arrangement of fibrils, which meet just at the vessel wall. These are undoubtedly continuous with the cells.

The bloodvessels are excessively numerous, and show much thickened, hyaline walls, and there is probably some calcareous infiltration; a peculiar feature is the persistence of the vasa vasorum even after entire occlusion of the lumen. The cavities are both pre-formed and softened. The pre-formed cavities are enclosed by a layer of fibres like that around the central canal of the cord, and upon this layer is a membrane lined with high epithelium. There have been hemorrhages into these cavities, and there is granular material at the edges which looks like degenerated neuroglia.

As to the softened cavities, none of the larger spaces can be said positively to be of this nature. There are, however, areas of disintegration which begin in the fibres, and about some vessels that appear to be veins there are collections of a granular, coagulated material.

There is no doubt that the pathological new formation is a tumor, and upon microscopical examination it becomes evident that it is a glioma.

The peculiar rosette-like arrangement of the cells about the bloodvessels has not been described previously in syringomyelia, but it has

been seen in gliomata elsewhere, and I have recorded[1] an instance of grouping of the cells in such a form, though not necessarily about the bloodvessels. I have in the same paper described the production of glia-cells from ependyma-cells, and the cells composing this tumor are strikingly similar to embryonic ependymal cells, and are, I believe, of ependymal origin. Those lining the cavities are adult ependymal cells, and bear the same relation to the other cells of the tumor as do the cells lining the central canal of the cord to the neuroglia cells outside. The tumor is, therefore, what I have described as "ependymal-celled glioma."

Concerning the production of the cavities in syringomyelia, the most acceptable views are those of Hoffmann[2] and Schlesinger.[3] Both believe that there is in this condition a persistence of nests of embryonal tissue behind the central canal, perhaps in the line of closure. Hoffmann considers of equal etiological importance the existence of multiple spinal canals and the occurrence in the posterior commissure of large cells, the equivalents of ependyma-cells and their subsequent activity. Schlesinger agrees in the main, and adds that disease of vessels is equal in importance to the central gliosis. He insists that high central canal epithelium is frequently found as a lining to the cavities, and states that he considers hydromyelia and syringomyelia two forms of the same anatomical state. Saxer also attributes an important rôle to the central-canal epithelium in the production of pathological glia, though he does not think it is the essential source of the new tissue.

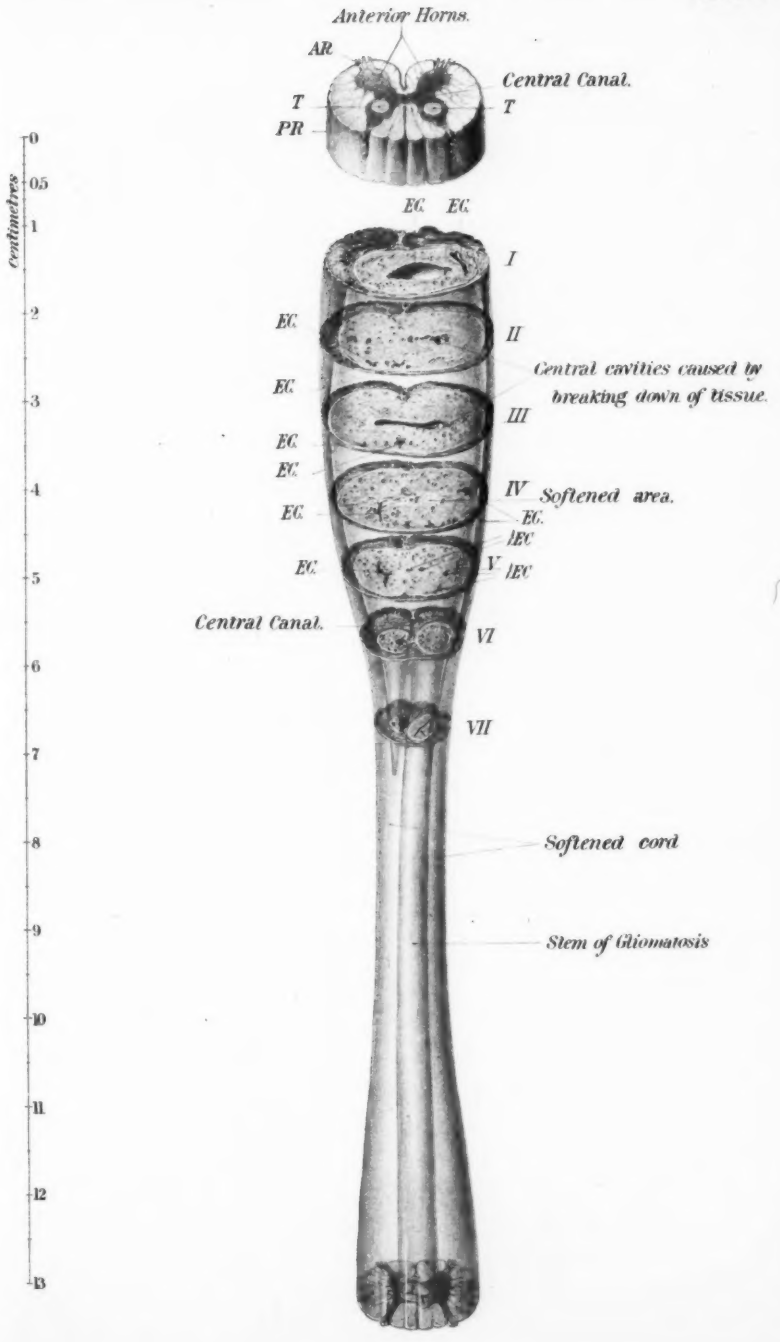
Schlesinger believes, however, that cavity formation may occur without primary increase in neuroglia. Müller and Meder[4] have reported a case, the increase of neuroglia in which they believed was secondary, and Weigert,[5] after citing cases, expresses his belief that the primary gliosis does not exist, and that the neuroglia may be even increased. He states that there is no proof that true gliosis softens, and there are many cases of extensive gliosis, as in multiple sclerosis, in which softening does not occur. Saxer[6] believes that softening in its various stages has been observed, and that many cases of syringomyelia have been encountered in which there was a primary increase in glia.

In this case beginning and advanced softening was observed in the pathological glia, and the extent and character of the new growth proves that it is of primary origin.

The question as to whether the new tissue in this case is to be considered a tumor must be answered affirmatively. It is an independent

[1] Journal of Nervous and Mental Diseases, May, 1898.
[2] Deutsch. Zeitsch. f. Nervenheilkunde, 1893, vol. iii.
[3] Die Syringomyelie. Vienna, 1895.
[4] Zeitsch. f. klin. med., Band xxviii.
[5] Beiträge z. Kenntniss d. Neuorolen menschlichen Neuroglia, 1895.
[6] Zeigler's Beiträge, Band xx.

PLATE I.



Max Brödel, del.

Heliotype Co, Boston.

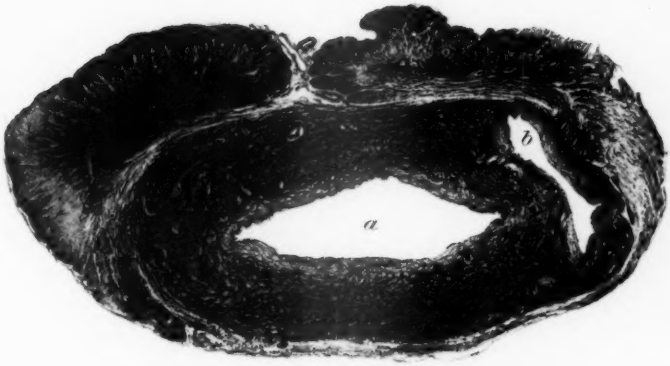


Fig. 1.

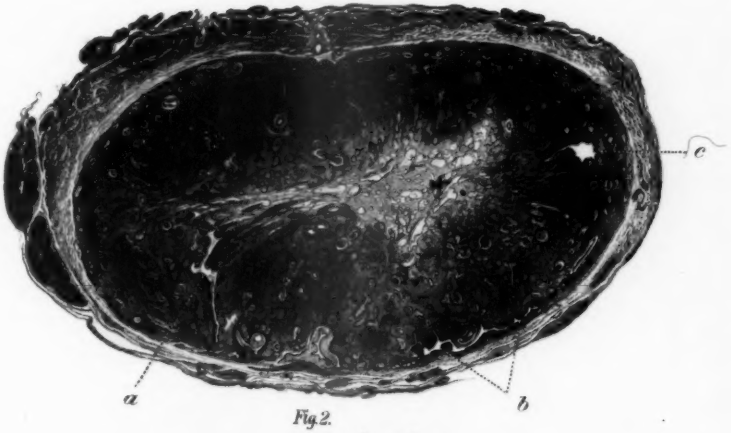


Fig. 2.

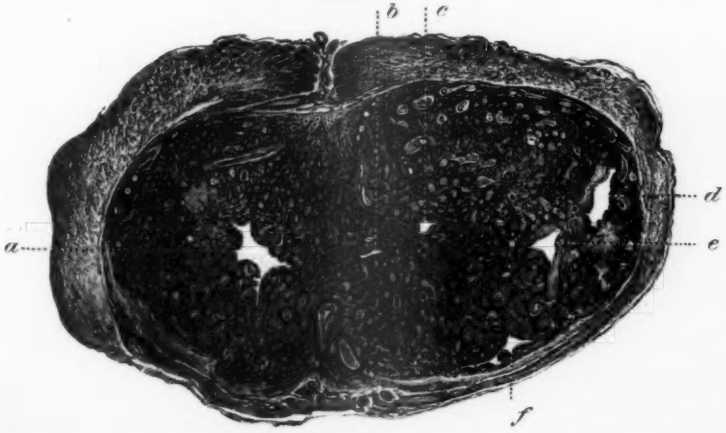


Fig. 3.

Max Brödel, del.

Heliotype Co, Boston.

Fig. 1.

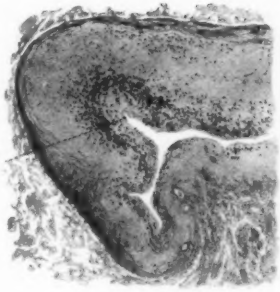


Fig. 2. 1 x 10

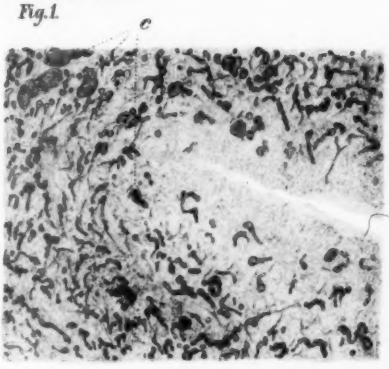


Fig. 3. 1 x 62

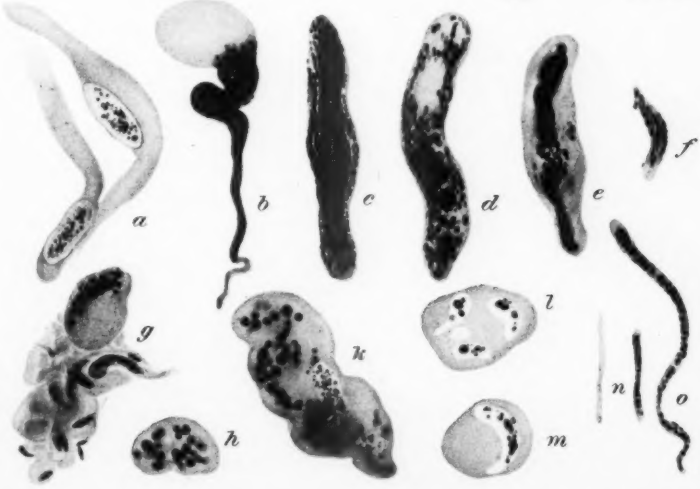


Fig. 4. 1 x 500

Max Brödel, del.

Heliotype Co, Boston.

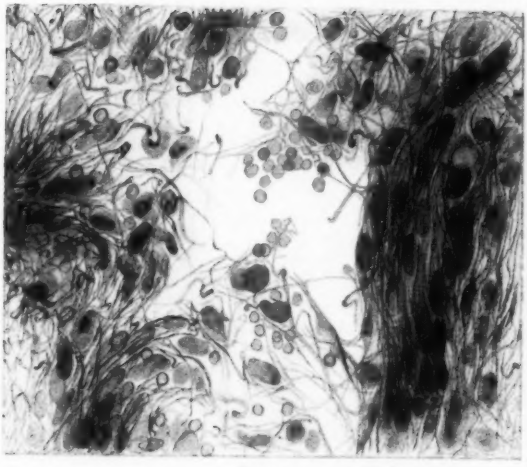


Fig. 1. *1 x 500*

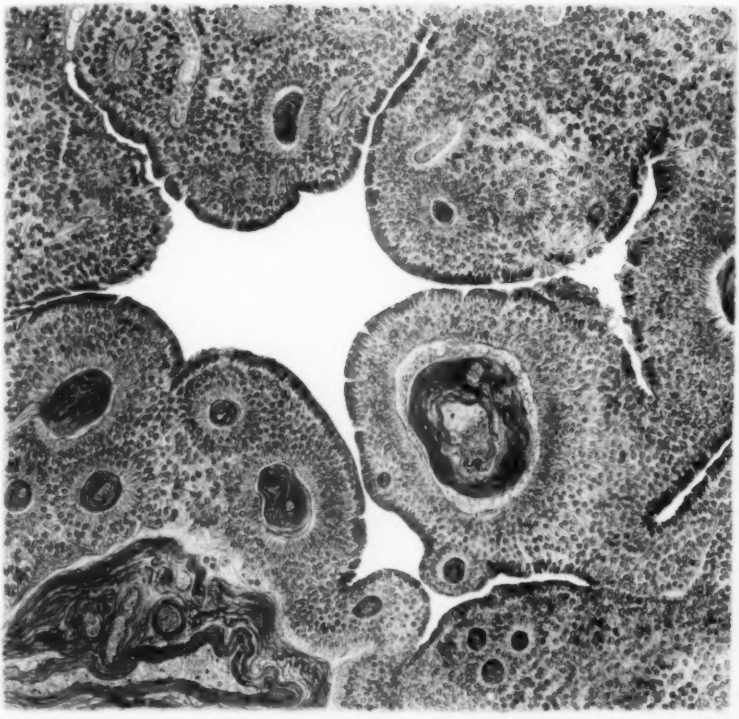


Fig. 2. *1 x 100*

Max Brödel, del.

Heliotype Co, Boston.

formation, and does not appear as the result of the action of any known irritant, it is circumscribed, and the cells composing it are embryonic.

DESCRIPTION OF PLATES.

PLATE I.

The drawing shows the position within the spinal cord of the new growth of glia and its extent; it also indicates the levels of the several sections and their chief characteristics. The letters E.C. indicate the epithelial cavities. T. is the tumor.

PLATE II.

FIG. 1 corresponds to Plate I., Section 1. Central growth of glia developed within the gray matter of the cord, chiefly within the posterior horns, which are entirely destroyed. Anterior horns partially preserved. *a* and *b*. Epithelial lined cavities. Weigert, Pal, and van Gieson's method. Magnified 6 times.

FIG. 2 corresponds to Plate I., Section 4. The new growth is somewhat more extensive, and, while occupying the entire posterior segment of the cord, it also encroaches upon the anterior white matter. The central zone shows rarefaction. *a b c*. Epithelial lined cavities. Magnified 6 times.

FIG. 3 corresponds with Plate I., Section 5. Except for the large number of epithelial-lined cavities, *a b c d e f*, it is similar to Fig. 2. Magnified 6 times.

PLATE III.

FIG. 1 corresponds with Plate I., Section 6. Two foci (stems) of tumor developed centrally in the cord, but posterior to the anterior commissure. The position of the central canal is indicated by *c*. In the larger focus an epithelial-lined cavity, in the smaller, a degenerative one, are shown. Magnified 6 times.

PLATE IV.

FIG. 1. Portion of Section 4, magnified 500 times. This drawing is from a softened area into which hemorrhage has taken place. It shows fragments of fibres, naked nuclei, and free red blood-corpuscles. There are independent cells and fibres, probably due to a degenerative process. Stained after Van Gieson's method.

FIG. 2. Portion of Plate I., Section 3, magnified 100 times. Projecting folds, resembling Grecian columns, covered with cylindrical epithelium, are shown. The folds are composed of rosettes of polyform cells, the similarity to ependyma cells being evident. Bloodvessels with much thickened walls and others with normal walls are present. The rosettes are developed about small bloodvessels. Stained in hæmatoxylin and eosin.

ADDITIONAL FIGURES.

Plate III., Fig. 2. Section through half of stem of new growth, showing part of cavity and distribution of the larger masses of glistening degeneration (Degeneratio micans). Müller's fluid, hardening, celloidin section unstained, mounted in salty glycerin, magnification of 10 diameters. The branch of the cavity marked *x* corresponds to the portion seen under higher power in Fig. 3.

Plate III., Fig. 3. Higher magnification of a part of the same preparation represented in Fig. 2.

c. Bloodvessels. The masses of the glistening substance assume various forms. A large number of pale swollen fibrils containing none of the refractive substance are indicated. Near the central cavity the coagulated albumin is seen. Magnification of 62 diameters (Zeiss, Compens. Oc. 4, Apochr. Obj.16 mm.).

Plate III., Fig. 4. Series of drawings representing elements selected from a Weigert-Pal preparation of the tissues pictured in Figs. 2 and 3; magnification of 500 diameters (Zeiss Compens. Oc. 4, Apochr. Obj. Oil imm. 2.0 mm.).

a. Parts of two swollen bipolar cells met with in one field of the microscope. These two cells do not contain the glistening substance. The nucleus is in both placed excentrically, this being obvious in the one cell seen "in profile."

b. Part of long bipolar cell in large part converted into the glistening substance, here stained black. At the thick extremity is a drop of protoplasm showing none of the Degeneratio micans.

c. Part of a swollen bipolar cell showing a black core with peripheral, nearly parallel, rows of dots and rods of the black substance.

d. Part of a bipolar cell showing rows of drops and rods, as well as several large drops of the blackened substance. A few very pale areas are visible in the protoplasm.

e. Part of bipolar cell showing central core of substance stained black, which at one end of the figure is resolved into a bundle of parallel rows of black dots and rods. There is a relatively large amount of swollen rather refractive protoplasm peripherally placed, which is free from Degeneratio micans.

f. A small bundle of interrupted black lines of the stained glistening substance embedded apparently in a common ground mass of protoplasm,

g. A complex of sections of fibres of various sizes running in different directions. Fusiform masses of the black substance distinctly visible in some of them.

h. Cross section of a rather large bipolar cell showing transverse sections of the longitudinal rows of masses of the blackened Degeneratio micans.

k. Large refractive mass containing particles of the blackened glistening substance. The protoplasm has apparently "run" into this form.

l, m. Sections of swollen bipolar cells containing sections of pale masses. Inside the latter are seen irregularly distributed droplets of the blackened glistening substance.

n. Two very fine fibres, both taken from a part in which all the elements in the tissue are swollen. One of the fibres is free from, the other contains, the substance which stains black in Weigert-Pal.

o A rather fine fibre, showing fragments of the blackened substance. The upper thickened end of the fibre is seen in cross sections and on the cut surface is seen a central core, which consists of a homogeneous fused mass of the blackened glistening substance.

A CASE OF LYMPHATIC LEUKÆMIA COMBINED WITH PULMONARY TUBERCULOSIS.

By E. R. Baldwin, M.D.,
and
J. A. Wilder, M.D.,
of Saranac Lake, N. Y.

(*Studies from the Saranac Laboratory for the Study of Tuberculosis.*)

References to the combination of leukæmia with tuberculosis are not common in the literature of either disease in a careful review that we have made of the subject. Moreover, the distinctly lymphatic variety of leukæmia alone is uncommon, as well as the slow course apparently run by this case whose history of the enlarged lymph-nodes covers nearly two years.

Volpe[30] reports two cases and reviews six from previous records. Cases are described by Quincke and Stintzing, which are mentioned by Lichtheim,[1] who also had one of the splenic-myelogenous variety, terminating with acute tuberculosis. Musser[2] and Sailer found a healed tuberculous focus in the lungs of a leukæmic individual. A case of splenic-myelogenous type by Weidner[3] may have been tuberculous also.

What the influence of each disease upon the other may have been in our case is not easily determined. The two diseases seemed to have periods of activity and quiescence, with the leukæmia most prominent at the time of death, but we cannot say what their relations were except from the history, until three months prior to death. It may, indeed, have been an instance of pseudo-leukæmia gradually transformed into

leukæmia, as the cases of Martin and Mathewson[4] and those referred to by Cabot[5] may have been, though the latter regards these as rare.

The comparative frequency of so-called pseudo-leukæmia combined with tuberculosis, with the latter disease as the suggestive cause of the lymphatic hypertrophy, argues our case to have been such an instance in its beginning.[7 12]

The history indicates that the lymphatic enlargements developed simultaneously with the tuberculosis, while section of numerous lymph-nodes failed to indicate the slightest old or recent tuberculosis in them. However that may have been, the first blood examination was unfortunately not made until two months before death, when the enormous number of small lymphocytes established the leukæmic nature of the lymphatic hyperplasia, and the great excess (98 to 99 per cent.) of small lymphocytes at once placed it in the class of lymphatic leukæmias.

Which disease was primary? This is also difficult to decide from the history, since the symptoms of both seemed to develop immediately after an acute tonsillitis in March, 1895. There certainly is greater probability that the tuberculosis existed prior to that time. Unfortunately no microscopical examination was made of the tonsils after their removal in 1895, and one can only speculate as to their being tuberculous.

Negative results were obtained from cultures from the blood during life, and from the spleen, lymph-nodes, liver, and blood-clots in the heart after death.[13 21 30] Consequently nothing was learned in this manner pointing to an infectious origin of the leukæmia.

Attention may be called to the diminution in size of the superficial lymph-nodes, and probably the deeper ones and spleen during the last months of life, and also the enormous number of leucocytes during the final illness. The former change is mentioned as occurring in several instances referred to by Cabot[5] and Kovacs[22] in leukæmias complicated by acute diseases, also those of Nash[24] and Fränkel.[27] The white cells also diminished in these cases, except in one complicated by grippe pneumonia (Müller[23]). There was apparently no qualitative change in the leucocytes during the last days in our case.

The uric acid in three determinations in our case was markedly increased, but no attempt was made to note the relationship existing between the leucocyte-count and the excretion of uric acid.[25 29]

With the Ehrlich-Biondi differential staining it was found that very few myelocytes were present, indicating that the marrow was little involved in the morbid process. No nucleated red cells nor "mast-cells" were recognized at any time.

History. A. C. A., aged forty-seven years, American, born in Binghamton, N. Y.; married; machinist; admitted to the Adirondack Cottage Sanitarium on June 8, 1895.

Family History. His father died of chronic tuberculosis ten years

ago, at the age of seventy-three years. His mother died forty-two years ago, of the same disease, at the age of thirty-four years. Five maternal aunts and uncles died of tuberculosis. Five brothers and sisters are living and healthy (one half-brother and one half-sister).

Personal History. He had scarlatina, measles, and whooping-cough in childhood; nasal catarrh many years; gonorrhœa at eighteen; he denies syphilis and malaria. He married in 1886; his wife is healthy; there have been three children, of whom one died of pneumonia, aged ten months, and the others are healthy. He has used alcohol and tobacco in moderation.

Present Illness. The patient became debilitated in the summer of 1894 by confinement in an engine-room. A companion, who expectorated on the floor, afterward died of tuberculosis. In March, 1895, he had acute tonsillitis and "grippe," which is described by the attending physician, Dr. S. A. Twinch, of Newark, N. J., who kindly writes as follows: "In March, 1895, I was called to see A. C. A., I found him with what I took to be tonsillitis. After a few days the pain and difficulty in swallowing subsided, but some fever remained, and the swelling in the tonsils did not decrease. It was at this time that the glandular structures of the neck began to swell. I now noticed for the first time dulness on percussion at the apex of one lung, with harsh respiration and some râles. Shortly after this I took the patient to Dr. Eagleton, of this city, who removed either one or both tonsils. These specimens were not examined microscopically, but on gross examination they were very hard and dense to the touch. The swollen condition of the glandular structures of the neck remained throughout the time I had the patient under my care. In looking back upon the case I regard it as tubercular from the first. I do not think he had an attack of grippe."

In the following May the patient had a slight hæmoptysis, four weeks before admission to the sanitarium.

Status Præsens (June 11, 1895). There is the appearance of moderate anæmia; he has a blonde complexion; his weight is 122¾ pounds, eighteen pounds below the normal; his height 5 feet 3 inches. There is slight debility; the temperature is normal; the pulse 88; there is slight cough and expectoration; no tubercle bacilli were found in three slides; no chills nor sweats; appetite and digestion good.

Physical Examination. Cervical lymph-nodes enlarged; heart-sounds normal.

Lungs. There are bronchial voice and breathing and coarse râles at the right and left apex front and back, and a friction-rub in right infra-axillary space.

The larynx is normal.

August 25, 1895. Weight 131¾ pounds. Cough and expectoration slight. Temperature normal; fewer râles in chest.

February 26, 1896. Weight 134¾ pounds. Pulse 80; temperature normal. Respiratory sounds nearly dry except at the right apex.

During the past year the lymph-nodes in the right axilla have become enlarged to the size of marbles; then the left axillary and the right and left inguinal. None at present enlarged except the cervical.

Treatment. Arsenic and cod-liver oil.

Discharged May 9, 1896. Tuberculosis arrested.

September 24, 1897. Patient has lived in town since his discharge from the sanitarium, and continued in a fair degree of health until the

past spring. Since July he has had diarrhœa, two stools daily; also sweats, and a temperature of from 99° to 99.5° F. and occasionally higher. His cough and expectoration have increased. He complains of weakness of vision in the right eye and of deafness. There has been no epistaxis and no priapism.

Status Præsens. Conjunctivæ quite pale; prominent temporal arteries; arcus senilis marked; general condition weak; gastric digestion fair; expectoration moderate and of muco-purulent character; bacilli found in small numbers; voice husky. There is a fulness in the neck, axillæ, abdomen, and groins. The thorax is broadened at its base. The urine contains no albumin, casts, or sugar. Ophthalmoscopic examination reveals numerous dark spots, resembling pigment, on the right retina. Impacted cerumen is found in the right ear, but both drums are normal. Tonsils, faucial pillars, and pharyngeal mucosa are much hypertrophied, and posterior nares obstructed by adenoids. There is no ulceration; the lingual tonsils are enormously enlarged, and there is much hyperplasia of all the laryngeal mucosa, with possibly ulceration in interarytenoid space.

Lungs. Dulness at both apices. Right apex: broncho-cavernous breathing; few râles. Left apex: dry, broncho-cavernous breathing in the suprascapular space behind. The heart-sounds are normal; the apex beat is at the nipple, being evidently pushed up by enlarged spleen and liver.

Spleen. The line of dulness extends 9 c.cm. from the edge of the ribs toward the umbilicus, and from the sixth rib downward to the left iliac fossa.

The lower part of abdomen is dull, possibly some ascites.

Liver. The edge is felt, being continuous with splenic dulness and extending across the abdomen 9 c.cm. from edge of ribs on the right toward the umbilicus.

The blood examination reveals leucocytes in enormous number, consisting principally of small lymphocytes. (See tables for relative numbers and differential counts.)

After September the patient continued in poor condition, and was very weak, until, on November 28th, he took a severe cold, which resulted in a bad bronchitis with profuse expectoration. His temperature varied from 100° to 103° F., while during October it had rarely reached 99.5° F. The sputum examinations several times revealed no tubercle bacilli. The excessive cough and cardiac weakness finally induced œdema, and exhaustion caused death on December 10, 1897. For some weeks preceding death the lymph-nodes, in all palpable situations, appreciably diminished in size, and the line of dulness made out in the abdomen on September 24th was decidedly changed on the left side at the time of death, owing apparently to the shrinkage of the spleen.

Date.	Leucocytes.	Red corpuscles.	
October 1, 1897	695,000	3,010,000	1 to 4⅓
November 20, "	710,000	3,190,000	1 " 4½
December 1, "	1,113,000	2,924,500	1 " 2⅘
" 4, "	1,104,000	2,666,000	1 " 2⅖
" 6, "	943,550	2,608,950	1 " 2¾
" 9, "	959,500	2,435,500	1 " 2½

	Oct. 1.		Nov. 20.		Dec. 1.		Dec. 4.		Dec. 6.		Dec. 9.	
	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.
Lymphocytes,	4907	98.14	4944	98.88	4919	98.38	4941	98.82	4947	98.94	4968	99.36
Polymorphous neutrophiles	23	0.46	25	0.5	44	0.88	43	0.86	36	0.72	14	0.28
Lr'ge mononuc. & transitional	46	0.92	19	0.38	11	0.22	12	0.24	11	0.22	15	0.3
Eosinophiles	0	0	0	0	1	0.02	0	0	0	0	0	0
Myelocytes	24	0.48	12	0.24	25	0.5	4	0.08	6	0.12	3	0.06
Total	5000	100.00	5000	100.00	5000	100.00	5000	100.00	5000	100.00	5000	100.00

Urinalysis. Albumin and sugar absent. No casts after centrifugation. Calcium oxalate in abundance; amorphous urates; leucocytes. Sediment stained for tubercle bacilli, with negative result.

Date.	Quant. 24 hrs.	Urea.	Uric acid.
September 24, 1897	780 c.c.	23.4 gms.	1.964 gms.
October 22, "	1300 "	23.4 "	2.075 "
December 9, "	1170 "	36.27 "	2.772 "

The feces were examined for tubercle bacilli, with negative result.

Autopsy (fourteen hours after death). Rigor mortis fully developed; œdema of lower extremities; superficial lymph-nodes not so prominent as during life, but on palpation all found markedly enlarged and of firm consistence; no fluctuation can be detected, and they are all movable.

Abdomen. Upon incision no fluid is found in the cavity; no tubercles on peritoneal surfaces; enlarged liver presents, occupying a large part of the abdomen. The omentum is studded with enlarged lymph-nodes, and is adherent to the abdominal wall in several places. The inguinal chains of lymph-nodes are seen much enlarged on both sides. There is no caseation on section.

The left kidney is lobulated and enlarged; weight, 270 grammes. Metastatic lymph-node is seen in its cortex the size of a pea. Capsule not adherent; cortex thickened and rather pale; it contains several small cysts and caseous spots. The lymph-nodes near the pelvis are enlarged. The right kidney is about the usual size, and appears normal in other respects. Both suprarenal capsules are soft, not enlarged, and appear normal.

Mesenteric and retroperitoneal lymph-nodes enormously hypertrophied, varying in size from that of a chestnut to that of a hen's egg, in places so bound together as to form large, irregular masses. Numerous sections reveal only soft, hyperæmic lymphoid tissue, without suggestion of caseation or fibrous cicatrices due to tuberculosis.

The urinary bladder contains about 120 c.c. (℥iv) of pale urine; the mucous membrane is normal. Prostate normal. Common iliac arteries have calcareous patches. The stomach is normal; it contains no food. The duodenum is apparently normal, though there is some redness of

the mucosa, probably from passive congestion; no ulceration; the common bile-duct is patent. The ileum has a congested mucosa. Peyer's patches rather prominent; vermiform appendix normal; contains small amount of feces. The colon has a congested mucosa, and is covered with mucus, suggesting a mild colitis. There is no ulceration.

Liver. The right lobe fills a large part of the right hypochondrium and lumbar region, while the left is enlarged in the same proportion, extending well into the left hypochondrium. The edge of the organ is 9 c.cm. from the margin of the ribs on the right toward the umbilicus, and 10 c.cm. downward in the median line from the ensiform cartilage. The external surface is rather pale and glistening; no adhesions. Weight, 2720 grammes; greatest width, 28 c.cm.; greatest length, 22.5 c.cm.; greatest thickness, 11 c.cm. The cut surface is pale, with lobules distinct.

The gall-bladder is normal.

The spleen is considerably enlarged and firmly adherent to the diaphragm and abdominal wall. It extends 1 c.cm. below the free margin of the ribs. Its capsule is much thickened, giving the impression of a long-standing perisplenitis. Weight, 900 grammes; greatest length, 21 c.cm.; greatest breadth, 16 c.cm.; greatest thickness, 8 c.cm. The external surface is mottled, dark-red, and in places white from the thickened capsule. The cut surface reveals hypertrophied trabeculæ; firm consistence; hyperæmia and a few small infarctions.

The pancreas is apparently normal.

The diaphragm reaches to the third intercostal space on both sides.

Thorax. The cartilages are ossified, but the ribs are rather soft and cut easily; their marrow seems to be slightly more fluid than usual.

Heart. The normal amount of pericardial fluid is present; the position of the heart is considerably higher in the thorax than normal, due to enlargement of the liver and spleen. Both auricles and ventricles are distended by light-colored clots; there is moderate dilatation of the right auricle. Wall of the left ventricle is 1.5 c.cm. thick; wall of the right ventricle 0.04 mm. thick. The heart valves are normal. Weight of heart, 270 grammes.

Right Lung. There are general adhesions of the anterior surface and apex; base free; the parietal pleura is much thickened; 250 c.cm. of light-colored fluid in the pleural cavity; several small cavities, averaging 1 c.cm. in diameter, with caseous walls in the upper lobe; caseous spots disseminated throughout lung; œdema and hypostatic congestion of lower lobes.

Left Lung. Adhesions at apex; cavity about 2 c.cm. in diameter, containing some caseous material at the posterior aspect of the apex. Tubercles disseminated throughout the upper lobe; lower lobe œdematous, but free from tubercles and adhesions. No recent miliary-like tubercles seen in either lung; moderate pigmentation of both lungs. Bronchi not dilated; mucosa hyperæmic and covered with abundant muco-pus. Bronchial and mediastinal nodes very large, varying in size from a chestnut to a hen's egg; soft and elastic to the touch, and on numerous sections revealing hyperæmia, but no fibrous changes or caseation.

Thymus gland not found. Cervical and supraclavicular nodes, brain and spinal cord not examined, as permission was not obtained.

Microscopical Examination. Tissues hardened in 4 per cent. formalin; some in alcohol.

Liver. Capsules slightly thickened with layers of lymphoid cells directly beneath and extending downward between the lobules to a considerable distance. Large collections of these cells are to be seen in the interlobular spaces, while the capillaries and lymph-spaces are everywhere distended with lymphocytes. The cells of the parenchyma are much atrophied by pressure, and many contain particles of pigment. Branches of the hepatic, and particularly those of the portal vein, are filled and surrounded by lymphocytes in the perivascular spaces. Nothing suggesting tuberculous infiltration to be seen. The bile-ducts are empty and the epithelium is normal.

Spleen. Capsule very much thickened. Pulp consists of a dense mass of lymphoid cells. Trabeculæ in some places hypertrophied, in others they seem to have entirely disappeared. Malpighian corpuscles very few in number, and show atrophy, with fibroid changes. Pigmentation of the layer of cells just beneath the capsule.

Pancreas. Capillaries and lymph-spaces everywhere filled with lymphoid cells, as in other organs. The gland epithelium replaced in many cases by masses of lymphoid cells.

Kidneys. Capsule is apparently normal, great number of lymphocytes infiltrating all parts of the organ in the interstitial spaces. The capillaries and Malpighian tufts are distended with lymphocytes. Epithelium of the tubules somewhat swollen and granular.

Lymph-nodes consist of dense masses of lymphoid cells. The trabeculæ seem to have almost entirely disappeared. No fibrous changes or areas of necrosis can be made out.

Intestine. Sections near Peyer's patch; villi stand out prominently. The central chyle vessels and their capillaries are distended with the same round-cells seen in all other sections; lymph-follicles are quite prominent, and the collections of lymphoid cells are to be seen in the muscular layer; tubercles not recognized.

Lung. Sections through consolidated lung show old, fibrous tubercles, with intervening healthy tissue, the capillary walls standing out plainly with their contained lymphocytes.

The peribronchial spaces are much infiltrated with lymphocytes and fibrous tissue. No apparently recent tubercles are to be seen, and sections stained for tubercle bacilli did not reveal them so far as examined, which was not surprising, considering the chronic character of the tuberculosis. Specimens of bone-marrow of ribs were stained with Ehrlich-Biondi triple stain and with hæmatoxylon and eosin, and found to consist almost entirely of the small lymphoid cells, with large, round nuclei. The nuclei of many of them contained moderately coarse, deeply staining granules. Small cells with polymorphous nuclei and large cells, some with polymorphous nuclei and some with round nuclei, were present, but in relatively very small numbers.

Bibliography.

1. Lichtheim. Deutsch Med. Woch., September 30, 1897.
2. Musser, J. H., and Sailer, J. Transactions Association of American Physicians, 1896, vol. xi.
3. Weidner, Carl. Internat. Clinics, 1897, vol. iv.
4. Martin, C. F., and Mathewson, C. H. British Medical Journal, December 12, 1896.
5. Cabot, R. C. Clinical Examination of the Blood, 1898, third edition.
6. Brentano and Tangl. Deutsch Med. Woch., April 23, 1891.
7. Weltzoldt and Askanazy. Ziegler's Beiträge, Bd. iii.

8. Weishaupt. Arbeiten Path. Institut. Tübingen, Bd. i. Heft 1.
9. Fischer, F. Deutsch. Zeitsch. f. Chirurg., 1893, Bd. xxxvi. Heft 3–4.
10. Ricker. Langenbeck's Archiv., 1895, Bd. l.
11. Dietrich. Beitr. z. klin. Chirurg., Bd. xvi. 2.
12. Lewis, Charles H. Medical Record, August 28, 1897.
13. Traversa, F. Ref. Baumgarten, Jahresber. 1893, ix.
14. Verdelli. Ref. Baumgarten, Jahres. 1893, ix.
15. Gram, Ch. Ref. Baumgarten, Jahres. 1894, x.
16. Grossi, C. La Riforma Med., 1893. 156–157.
17. Bonvicini, A. Bologna, 1896.
18. Lesage. Compte-Rendus Soc. de Biol., Paris, December 24, 1892.
19. Vehsemeyer. München. Med. Woch , 1893, No. 30.
20. Delbert, P. Compte-Rendus de l'Acad. des Sciences, 1895, No. 24.
21. Mannaberg, J. Verband. f. des Cong. f. Innere Med., 1896.
22. Kovàcs. Wien. klin. Woch., 1893, No. 40.
23. Miller, H. F. Deutsch. Archiv. f. klin. Med., Leipzig, 1892, l, 47–81.
24. Nash, W. G. British Medical Journal, 1892, ii. 1054.
25. Gumprecht. Central. f. allg. Path. u. path. Anat., 1896, vii. 20.
26. Kuhnau, W. Central. f. allg. Path. u. path. Anat., 1896, vii. 14.
27 Fraenkel, A. Deutsch. med. Woch., 1895, 39–43.
28. Richter, P. F. Zeitsch. f. klin. Med., xxvii. 3 and 4.
29. Levy, A. M. Virchow's Archiv, 1898. 125. 1
30. Volpe, A. Arch. internaz. di Med. e. Chir., Napoli, 1896, xii. 161–175.

GASTROPTOSIS: REPORT OF A CASE IN WHICH A NEW OPERATION WAS UNDERTAKEN AND THE PATIENT GREATLY IMPROVED.

By Alfred Stengel, M.D.,

AND

Henry D. Beyea, M.D.,

of Philadelphia.

The following case is an instance of enteroptosis, or Glenard's disease, in which there was downward displacement of the stomach, intestines, and right kidney. The patient was a young, unmarried woman. There was no history of traumatism, nor of illness, nor of abdominal distention by pregnancy or fluid effusion to explain the displacement of the organs. The cause, therefore, must be considered as most probably compression of the thorax by tight clothing and relaxation of the ligaments. There was not rapid emaciation. A first operation (nephrorrhaphy) was undertaken in the hope that the gastric symptoms would subside with relief of the renal displacement. There was decided improvement, but the distinctly gastric symptoms continued, and notwithstanding prolonged rest and careful diet no relief was obtained. At this time the late Dr. William Pepper, under whose care she was, and one of the writers who had immediate charge of her case, discussed the advisability of operative interference, unaware of the fact that operative treatment had been suggested and accomplished in a few cases. In this discussion the possibility of fully restoring the stomach was carefully considered, and the only sug-

gestion that presented itself, viz., attachment of the stomach to the anterior abdominal wall, was abandoned, because we were aware of the frequency of unpleasant symptoms in cases of adhesions of the hollow viscera of the abdomen. A second suggestion—that of gastroplication in the dependent part of the organ near the pylorus—was entertained, because we felt that the symptoms of distress, etc., might be connected with strain upon this part of the muscle of the stomach. It is not unlikely that severe strain would fall upon this part, which is the most active part (in a motor sense) in health, and in gastroptosis, the most unfavorably situated, and therefore the most prone to dilatation. If, then, an infolding of this part of the organ could be effected, and thereby the burden of the motor activity transferred to a part of the organ nearer the fundus, relief might possibly be secured for a time at least. At this point in the study of the case Dr. Beyea was called in, and suggested what appeared to us a better procedure than either of those named, and the case was submitted to him for operation. The operation will be described below. The history of the case is as follows:

Mary A., aged twenty-five years, white; no occupation; home in New Jersey; was admitted April 2, 1897.

History. Father living and enjoying good health at the age of sixty-four years. Mother died at the age of fifty-eight years. Three brothers living and well, as is also one sister. One brother died at the age of thirty-eight, of unknown cause. She believes it to have been stomach trouble.

The patient had scarlet fever and whooping-cough during childhood, but since then she had enjoyed the best of health until February, 1893, which was the beginning of her present illness.

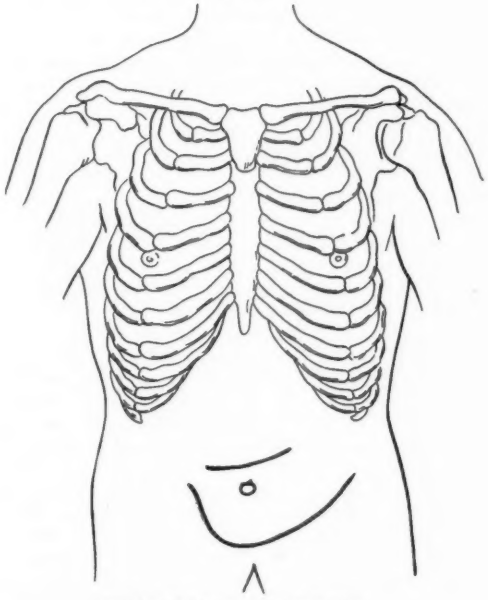
There was no history of traumatism.

In February, 1893, she noticed that immediately after eating she would have eructations of wind, lasting about two hours. The more food she ate the worse would be these eructations, and no matter what kind of food she took the eructations occurred. She occasionally had a dull pain or ache in the right flank. At present she does not complain of actual pain over the stomach, though it is at times tender on pressure. The patient has always had a good appetite. The bowels are very constipated. She has not led a sedentary life, but has always taken plenty of exercise, and she was always careful in eating, and masticated her food thoroughly.

Physical Examination. Chest ill-developed, long and narrow, especially below. The heart-sounds are normal. The lungs exhibit no abnormalities except slight "cog-wheel" breathing at the left apex. The abdomen is somewhat sunken in the epigastrium. At the umbilicus and down to two and one-half inches below it, and extending three inches to the left and one inch to the right of the middle line, is a protuberance, soft and elastic on palpation, not tender, and giving the impression of a stomach distended with gas. There is some tenderness in the epigastrium, and just under the ribs on the right side, as well as in the region of both kidneys. The right kidney is readily palpable, dislocated somewhat downward, seems a little enlarged, is very

tender on deep pressure, and is quite freely movable for an inch or more. The left kidney is not palpable. The hepatic and splenic dulness are normal. On auscultatory percussion the stomach outlines reach from one-half inch above the umbilicus (the lesser curvature) to a point two-thirds the distance from the umbilicus to the pubes (the greater curvature). The right border is an inch and a half to the right of the umbilicus; the pylorus apparently at the same distance to the right and a little above the umbilical level. (Fig. 1.) The left border is on a line with the anterior axillary fold. On distending the stomach, the outlines were found to correspond with the above description. Air passes the pylorus readily. There is no palpable growth.

FIG. 1.



Position of the stomach, April, 1897.

Three and one-half hours after a breakfast (consisting, however, of bread and coffee only) the stomach contained no remnants of the meal.

One hour after an Ewald meal, 125 c.c. of contents were obtained, containing a good deal of poorly-digested bread. Free HCl was present in slight amount. The total acidity was a little low—28. No lactic acid.

The urine and the blood were found normal.

April 8th. Six and one-half hours after a test dinner, consisting of a small Hamburg steak, two slices of bread, and 200 c.c. of water, 20 c.c. of thick contents were easily removed, after which the tube became

blocked with small shreds of meat. Lavage brought out several more shreds of meat and considerable fluid contents. The undiluted contents contained free HCl in quantity, and had the very high acidity of 116. There was no Uffelmann reaction for lactic acid. Much half-digested food was present.

10*th*. A gynecological examination made to-day by Dr. Penrose was negative. She has a very distinct jaundice to-day. Sclerotics look very yellow. Bowels costive and stools clay-colored. Otherwise she feels the same.

12*th*. Jaundice persists about the same in intensity, and stools are the same. Her other symptoms are not changed.

15*th*. Jaundice is very much less, but still is noticeable.

During this time the urine was repeatedly examined and was practically normal, though a little too concentrated.

18*th*. The jaundice has disappeared.

21*st*. Operation (by Dr. J. William White) in his clinic; nephrorrhaphy of the right kidney. The usual incision was made in the right loin, and on exposing the kidney it was found to be quite freely movable. It was then sutured in place in the usual manner and the wound closed and dressed antiseptically without drainage.

24*th*. Patient complains of a great deal of pain at the site of operation. A little albumin was found in the urine in two examinations after the operation, but there were no casts.

27*th*. Wound dressed to-day and is entirely healthy.

28*th*. Some slight temperature, which is due to tonsillitis.

30*th*. Temperature again shows a tendency to fall, and she feels very comfortable.

Soon after this the patient left the hospital.

Physical Examination on Readmission, October 9, 1897. The general appearance is distinctly improved. She looks heavier and has a better color. The examination of the chest organs shows entirely normal physical signs. The abdomen shows the same appearance as when last in the hospital. There is a prominence from an inch above the umbilicus to within an inch and a half of the pubis, which is roughly of the shape of the stomach, is tympanitic and elastic. Percussion and auscultatory percussion indicate more strongly that this is the descended stomach, of about normal size, and inflation confirms this and shows that the location and outlines of the organ are not changed since her discharge. The liver and spleen are of normal size and in normal position. The left kidney seems indistinctly palpable, but not movable. The right kidney is readily palpable, and is below its normal position by one inch or more.

12*th*. Lavage four and one-half hours after administration of a test dinner of Hamburg steak, a roll, and a glass of milk showed a considerable retention of fairly well-digested meat. The stomach walls are lax, and the fluid flows in readily and is returned by siphonage very slowly. A quart and a half of water is retained at a time, and the walls can be well distended with air without causing distress.

14*th*. She shows no change in condition or symptoms. Has a good deal of burning in lower epigastrium, usually several hours after meals. She has irregular, tender joints and complains of a "weak" and hollow feeling.

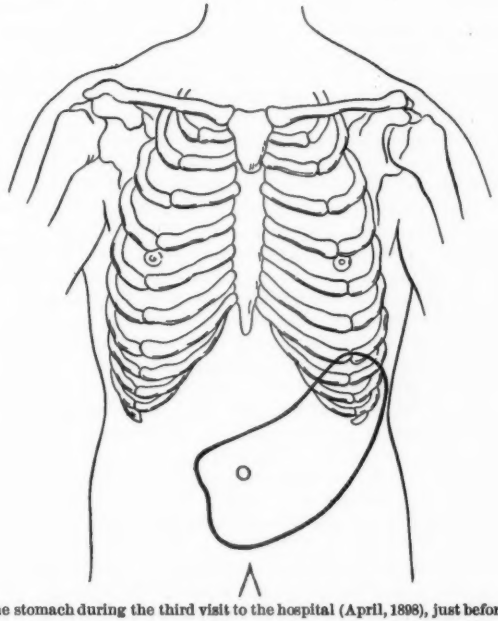
Third Admission (April 11, 1898). Her general appearance is distinctly improved. She has a better color, and has apparently gained flesh.

She complains of the same old trouble returning. Has a good deal of pain at irregular points over the abdomen, and especially some hours after meals there is a burning pain about the umbilicus, and distention with gas, and belching.

The right kidney region is often painful. The kidney may be felt somewhat below the normal position, but it is slightly if at all movable. The left kidney is not distinctly palpable.

The stomach is seen, upon simple inspection, in the same position as before. Upon percussion, however, and especially upon percussion after inflation, there seems to be some increase in the size of the organ. The pylorus is at least two and one-half inches to the right of the umbilicus, and nearly on a level with it. (Fig. 2.) The portion of the stomach lying to the right of the umbilicus is distinctly enlarged, and when distended the vertical width of the stomach extends from one and

FIG. 2.



Position of the stomach during the third visit to the hospital (April, 1898), just before operation.

one-half inches above the umbilicus to about one and one-half inches above the pubis. The fundus reaches up to the sixth rib in the anterior axillary line or a little anterior to that line.

The patient was now transferred to the gynecological wards, and the operation was performed on April 19, 1898.

Operation. The patient, after having been prepared for the operation of cœliotomy and anæsthetized, was placed upon the Boldt operating-table in a position opposite to that employed for operation through the lower portion of the abdomen. The object of this position was to permit the elevation of the chest and upper portion of the abdomen, which would allow the gravitation of the intestines and stomach out of the field of operation, and give the greatest operative space, in order to gain every advantage of the Trendelenburg position. The skin of the abdominal wall was then scrubbed with green soap and water, ether and alcohol, and the field of operation surrounded by sterilized towels. An incision about four inches in length was made through the linea alba, midway between the xiphoid cartilage and the umbilicus. The tissues were separated in the usual manner and the peritoneal cavity opened, exposing a small portion of the upper curvature and cardiac end of the stomach, the gastro-hepatic omentum, the gastro-phrenic ligament, and the lower portion of the liver. The table was then elevated to the Trendelenburg position, and the stomach displaced still further downward and out of the wound by means of gauze sponges. This procedure caused the gastro-hepatic omentum and gastro-phrenic ligament to be slightly stretched and separated from the underlying structures, which permitted an accurate determination of the length of the gastro-hepatic omentum and very much facilitated operative manipulation. The gastro-phrenic ligament was seen to be well developed, and evidently formed a strong support for the cardiac end of the stomach, while the other portion of the gastro-hepatic omentum was composed of thin, delicate peritoneum, but was determined to be of sufficient textural strength to hold sutures, and also gave much support. Retractors were now introduced and the liver held aside by the fingers of an assistant. Interrupted sutures were next introduced to shorten the gastro-hepatic omentum in the following manner: The first suture caught the gastro-phrenic ligament above at a point as near as possible to the diaphragm (a distance of about two inches from the diaphragm) and below, just above the gastric vessels. After this suture had been placed the gauze sponges which displaced the stomach were removed and the suture temporarily tightened, so as to determine the height to which the stomach could be brought by this manner of suturing and the degree of support which would be furnished to the stomach. This having been determined to be satisfactory, the stomach was again displaced out of the wound and the suturing continued. The second suture was introduced through the gastro-hepatic omentum opposite, and about one-fourth of an inch from the first one, followed by a row of eight or ten others introduced in the same way, to include the left three-fourths of the gastro-hepatic omentum. In order to be sure of gaining a wide surface of adhesion, particularly in relation with the gastro-phrenic ligament, three or four more sutures were introduced, which included the peritoneum above and below those already placed. The gauze sponges were again removed, and the first and then the second row of sutures were tied, forming a tuck in the gastro-hepatic omentum and gastro-phrenic ligament. After this had been accomplished the stomach was seen to occupy what was thought to be a normal position. All gauze sponges were then removed from the abdominal cavity and the table lowered until the patient was in a horizontal position. The wound was closed by suturing the peritoneum with fine silk, the fascia with silver wire, and

the skin with fine silk, with an intracutaneous stitch. The wound was dressed with two layers of sterile gauze held in position by antisepticized colloidon, covered by several more layers of sterile gauze. In order to assist in giving support to the stomach and aid in preventing traction upon the sutures during the early part of convalescence a large compress of gauze and cotton was placed over the lower two-thirds of the abdomen, and the dressings and compress held in place by a many-tailed flannel binder.

Fine silk was employed for suturing the gastro-hepatic omentum and gastro-phrenic ligament. The needles were small, curved, and round-pointed. This particular form of needle was selected to prevent tearing the tissue in the introduction of sutures. In introducing the needle care was taken to introduce the stitches evenly and accurately without causing tension. Each suture also caught the greatest possible amount of tissue practicable, in order to give the greatest strength and form a wide adhesion.

After the operation, which lasted forty minutes, the patient was returned to bed in good condition, the pulse being 98 and the temperature 97° F. She made a normal convalescence. After the first five hours the pulse was never more frequent than 78, and the temperature but once reached 100° F. She was given nothing by the mouth for forty-eight hours except small amounts of hot water, at the end of which time drachm doses of milk and lime-water began to be administered hourly. The amount of milk was gradually increased after twelve hours, until, on the fifth day after operation, she was taking five drachms of peptonized milk every hour. The bowels were opened by an enema thirty-six hours after operation. She was kept in bed and upon her back until June 28th, and left the hospital on July 1st.

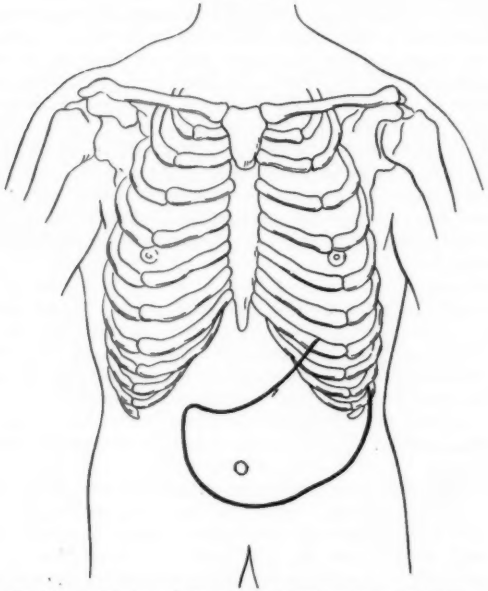
After her discharge from the hospital she wrote us from time to time about her condition. After a sufficient time had elapsed we requested her to return to us for examination. The results of this examination are recorded in the next paragraph.

November 10, 1898. The patient visited the hospital to-day, reporting a gain of ten pounds in weight, and was feeling somewhat better than previous to the operation. A stomach-tube was inserted and the stomach inflated with air. This showed that the lesser curvature was still well supported, and the greater curvature did not extend more than an inch and a half below the umbilicus, taking the lowermost border of the sloping projection caused by the inflation as the situation of the greater curvature. (Fig. 3.)

March 14, 1899. The patient again returned to the hospital upon our request, and states now that she is very much better, and has gained nine pounds since her last visit. She is able to eat freely without discomfort, has a distinctly better appetite, and feels inclined to do more work about the house. The stomach was inflated with air and was found to occupy exactly the same position as that discovered at the last examination. Palpation of the kidney reveals the fact that it has been sustained in its normal position. Twenty-four ounces of water were then allowed to flow through the stomach-tube, when the patient complained that the stomach felt full. The tube was carefully removed, and the gastro-diaphane was inserted. When the light was turned on a bright spot of illumination was observed (umbilicus) and diffuse illumination of the area, which had been prominent upon inflation, and having almost

the same superficial boundaries. The results of this examination were, upon the whole, unsatisfactory on account of the haziness of the outline

FIG. 3.



Position of the stomach November 10, 1898, and March 14, 1899.

of the light and the changed relations with changes in position of the patient and changes in the tube within the stomach.

We have made a careful search through medical literature to determine what operative measures have been used for the relief of this condition, and have found the cases which are abstracted below. It will be observed that in none of these was the operation exactly similar to that which we undertook, although one of the operators (Davis) describes a very similar operation for the relief of descent of the small intestine which accompanied the gastroptosis.

Treves[1] records an interesting case, as follows: The patient, a young lady, aged twenty-two years, had been ill for six years. She was highly cultivated, but had never been considered as a neurotic subject, nor did she appear so. The illness began six years before with an acute abdominal disturbance, supposed to be an ulceration of the stomach or intestine. The symptoms rather pointed to an intestinal trouble, as far as could be made out from the story of the patient. There had been a

[1] British Medical Journal, January 4, 1896.

fall previous to this illness, and she never fully recovered after it. The symptoms in general were those associated with Glenard's disease. Abdominal pain was almost constant, vomiting was common, and the vomited matter was intensely acid. She was much worse when in the upright position. A right floating kidney had been discovered and had been fixed in place by a surgeon three years before, and it still remained in good position. The rest treatment was tried, but the patient grew worse under it. Finally she had found relief by wearing a belt, but the latter had to be made increasingly stronger to support the viscera. Treves operated in June, 1895. The abdomen was opened in the middle line a little below the xiphoid cartilage. The liver was found presenting at the wound, and the stomach occupied a lower level than usually, but it was impossible to drag it upward. This was found to be due to the fact that the greater omentum was rolled up into a rigid cord, which was fixed to a mass of stony hardness in the right iliac region. A second incision was made over this mass, and it was found to be a collection of old, tuberculous glands. These were at once removed. The stomach then became movable. The liver was secured in place by ligatures. These concerned the lines of the falciform ligament and the umbilical fissure, the most important stitch being passed through the liver near its edge and penetrating the round ligament. The other stitches involved the round ligament and the falciform ligament. Above, the sutures were passed through the fibrous tissue of the abdominal walls at the side of the xiphoid cartilage. The patient made an excellent recovery without complications, excepting a small stitch abscess, and the troubles depending upon the ptosis of the viscera disappeared. She was able to walk without discomfort. The gastric symptoms almost disappeared, and five months after the operation, when the patient left England, the only complaints were of weakness and of some intestinal pain which may have been due to adhesions.

Duret[1] describes a case of gastroptosis in which he performed a novel operation, which he designates "gastropexie." The patient was a woman, aged fifty-one years, who had been in good health up to a comparatively recent period. She was married at twenty-two years of age and had two children. She had had some nervous symptoms which were attributed to cervical metritis and displacement of the uterus. Three years before she came under observation she had suffered with bad digestion, due to dietary irregularities. The symptoms of gastric disturbance coincided with the first days of her periods. The dyspeptic troubles increased, and she lost weight, the decrease amounting to seventeen and one-half kilos. No improvement followed treatment of various

[1] Revue de Chirurgie, 1896, p. 421.

kinds, and she came under the author's care in a much emaciated state, though her face did not show the evidence of severe disease, the skin having a rather healthy color. The abdomen was hollow, and on palpation in the iliac fossa the cæcum could be found distended with fecal matter. In the left iliac fossa he discovered a hard mass, which could be rolled under the finger, and which was the sigmoid flexure turned upon itself, small in size, not being larger than the index-finger. The transverse colon could not be plainly palpated. The liver was moderately depressed or enlarged; it extended about the width of the finger below the ribs. The spleen was not accurately delimited. In following the procedure of Glenard he could not determine any movability of the right kidney. On percussion the epigastric region was hollow, and superficial palpation determined the aortic contractions very plainly. The stomach could not be delimited by percussion, but on examining the splashing sounds it was discovered that the greater curvature extended to a point about four fingers' breadth above the pubes. Lavage of the stomach was practised, partly as a therapeutic measure and partly for diagnostic purposes, and it was found that it was possible to introduce a quantity of water, amounting to a litre and a quarter, without producing a tendency to vomiting. It was finally concluded to undertake an operation, and the author proceeded as follows:

After abdominal incision was made from a little below the ensiform cartilage downward 8 or 10 cm., sparing the peritoneum in the upper end of the incision, sutures were inserted through the peritoneal reflection of the stomach, at the junction of the lesser curvature and anterior wall of the stomach and through the peritoneum in the upper angle of the superficial wound, and the stomach thus fastened in place. The abdominal wound was then closed. The patient's general condition improved very much after the operation, and she was finally discharged, having begun to take ordinary food. The functions of the bowels were normal. Digestion was no longer painful. The tongue was clean, and she was able to take all sorts of food, including bread, which had been very difficult to digest before. She had gained in weight.

Byron B. Davis[1] records two cases in which operation was undertaken for the relief of gastroptosis. With regard to the diagnosis, he states that "if the lesser curvature is found half-way or more from the ensiform cartilage to the umbilicus, no doubt can exist that ptosis not only of the stomach but of the intestines is present." Some form of treatment must be devised which will support the displaced parts, and the functions of the intestines must be regulated in some way. He notes that the only surgical procedures undertaken prior to his report were gastropexy and gastrorrhaphy. Shortening the mesentery, which is the

[1] Western Medical Review, October 15, 1897.

method pursued by himself, had not been attempted before, nor had shortening of the gastro-colic omentum been practised.

CASE I.—A farmer, aged sixty-three years, presented himself with a large abdominal hernia, extending from two inches above the umbilicus to the symphysis. When he stood erect the recti separated for a distance of three or four inches, and a considerable part of the abdominal contents was extruded. This hernia made its appearance six or seven years before, and was caused by a laparotomy for the relief of an omental or intestinal tumor. The patient suffered with pain in the umbilical region and great discomfort in the lower part of the abdomen when he stood erect. There was also a left inguinal hernia. An attempt to cure both herniæ was made in February, and when the patient returned in July there was no recurrence of the herniæ, but he still had great discomfort and pain in the umbilical region, and it was supposed that adhesions had re-formed. The following operation was undertaken: A median incision was made from near the ensiform cartilage to an inch below the umbilicus. The adherent omentum was detached and a part ligated and removed. Then the stomach was drawn up into its natural position, and the lesser omentum near its reflection from the stomach was fastened to the peritoneum near the ensiform with fine silk sutures. The stomach was not greatly dilated, the transverse colon was fully six inches below the greater curvature, and a tuck was taken in the gastro-colic omentum, the bloodvessels being carefully avoided by the sutures. This procedure shortened the distance between the colon and stomach to two or three inches. The small intestines were brought forward, and the mesentery was found to be so much elongated that the loops of intestine could be raised four or five inches above the abdominal wall without great tension on the mesentery. In order to shorten the latter without interfering with its blood-supply he used a long needle with No. 4 silk, inserted the needle near the apex of the mesenteric triangles representing the mesentery between neighboring arterial branches, penetrated the mesentery, and brought the needle through in the opposite direction at the centre of the base of the triangle formed by its intestinal attachment. The suture being tied, a reef was thus secured in the mesentery, shortening it from two to three inches. The circulation was not impaired in the least. Sutures were thus used the entire length of the small intestine, not in every interarterial space, but almost as close as that. Altogether ninety-two sutures were inserted between the upper jejunum and the iliocæcal valve. The patient recovered with practically no shock from the operation, and did well. The bowels moved on the third day, and on the twentieth day the patient was out of bed, and left the hospital four weeks from the day of the operation. There was apparent improvement at the time of the report, in September, 1897.

CASE II.—Mrs. P., aged thirty years, the mother of two children, had suffered for two or three years with great distress after eating, and on standing she felt a downward pressure and bulging in the lower abdomen. There was obstinate constipation, great headache, and nervousness. The liver dulness was found to extend downward one and one-half inches below the ribs. The lesser curvature of the stomach was an inch above the umbilicus. The motor power of the stomach was normal and the examination of the gastric contents showed normal condi-

tions. The patient had been operated upon previously for the repair of the cervix and a torn perineum, but was practically unimproved. On September 4, 1897, an operation was undertaken for the relief of the gastric dislocation. The stomach was found as previously outlined. The lesser omentum near its attachment to the stomach was stitched to the peritoneum on a level with the ensiform cartilage; and at the same time, as the stomach was considerably dilated, gastrorrhaphy was performed, thus serving the double purpose of reducing the size of the stomach and raising the transverse colon. The operation required one hour, and there was no shock from it. The bowels moved on the third day, and on the ninth day the dressings were changed and the sutures removed.

Ferrari,[1] in discussing gastroenterostomy in the treatment of ectasia and ptosis of the stomach, advocates gastroenterostomy under certain circumstances in the latter condition.

In the discussion Nicomi expresses opposing views, and advises only gastroplication.

Hannecart[2] describes a case of marked splanchnoptosis and relaxation of the abdominal walls upon which Depage operated with success. The operation was as follows: A transverse incision was made from the end of the eleventh rib to the opposite side at the same point. Two converging incisions were made from the ends of this obliquely downward to about the horizontal level of the umbilicus, where they were about 5 cm. distant from the middle line. From these points two arched incisions were made, which united in the neighborhood of the symphysis. After the skin of this part was separated, the linea alba, together with the edges of the rectus muscle and the peritoneum, were extirpated. The parts were brought together in a T-shape, and thus the abdominal wall was narrowed in a vertical as well as a transverse direction. The suspensory ligament of the liver was fastened in the upper angle of the wound, and thus the liver was fixed in its normal position.

Terrier and Hartmann[3] record a case, as follows: A woman, aged thirty-one years, had been ill for two years, her sickness having commenced by inability to take wine, the taking of the least quantity of this causing severe pain. She had intense constipation, some purgative being invariably necessary to secure a movement. When she came under observation she was cachectic in appearance, and on distention of the stomach this organ was found dilated and dislocated in a downward direction. The dilatation, as figured in their cuts, involved the pyloric end of the organ mainly, and was of the form alluded to in our discussion of dilatation secondary to dislocation. The operation, performed by Dr. Hartmann, was a combined gastrorrhaphy and gastropexy. A number of parallel sutures were fastened in the dilated

[1] Revue de Chirurgie, 1897, vol. xvii. p. 337.
[2] Journal Méd. de Bruxelles, 1898, No. 8.
[3] Chirurgie de l'Estomac. Paris, 1899.

pyloric end of the stomach, so as form a plicatio, and the whole organ was then elevated and fastened to the abdominal walls. She was carefully fed for a time after the operation, and her general condition improved greatly. Three weeks after the operation inflation of the stomach showed it to be in the normal position. From October 12th, the day previous to the operation, to January 10th she gained fourteen and one-half kilos.

AN OUTLINE OF SOME OF THE MEDICAL USES OF THE RÖNTGEN LIGHT.

By Francis H. Williams, M.D.,
of Boston.

The subject of X-ray examinations in medical practice has developed to such an extent that it cannot be fully presented in a short paper. Two courses lie open: either to take up a single disease and discuss it in detail or to go over a number of diseases briefly. It has seemed to me that at the present time the latter would be the more acceptable course. I shall, therefore, present the results of the clinical observations made in some of the patients I have examined in order to suggest ways in which an X-ray examination may corroborate other evidence or assist us to an earlier or to a more correct diagnosis, and I will leave the fuller discussion of them for another occasion.

In a general way X-ray examinations may be said to have thus far been most used to detect foreign bodies or changes in shape and composition of bones, as in fractures, dislocations, necrosis, tuberculosis, rickets, and osteomalacia.

Gouty deposits about the joints, as shown by Dr. Arthur L. Fisk, are distinguished from rheumatoid arthritis by means of an X-ray photograph.

The stomach may be examined by giving the patient a large dose of subnitrate of bismuth (which the X-rays do not easily traverse) with food and then looking at the shadow of its contents by means of the fluoroscope. (Fig. 1.) I have also taken in this way an X-ray photograph of the stomach.

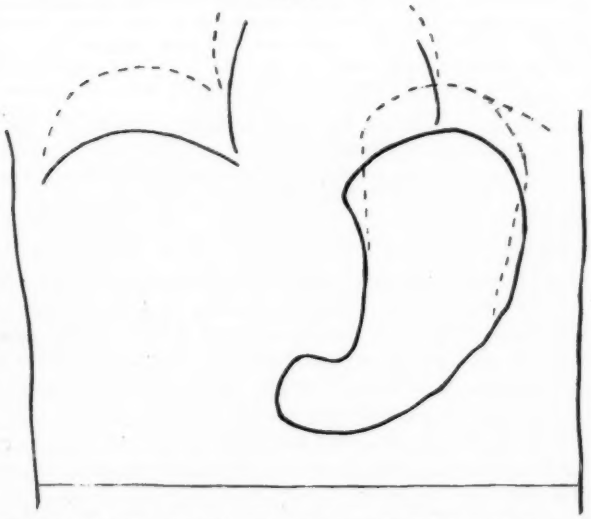
Carcinoma. In the cases of carcinoma of the stomach that I have examined with the fluoroscope if the growth could be seen it could be felt. I have taken one X-ray photograph of a carcinoma of the stomach and its thickest portions, as shown at the operation, corresponded to a dark area shown in the photograph and seen in the fluoroscope.

Ascites. The surface of the ascitic fluid may be seen in the fluoroscope if the patient is examined lying on his back, the physician looking through the body transversely.

Renal or vesical calculi containing phosphate or oxalate of calcium of fair size have been detected by an X-ray photograph.

X-ray examinations may be used in other diseases or conditions of the abdomen and pelvis, but I will not discuss them here.

FIG. 1.



Tracing from a girl seven years old (original two and a half times as large), showing the outline of the stomach one hour after a meal of bread and milk containing subnitrate of bismuth. The full horizontal line is at the level of the iliac crests; the full lines at right angles with it ar the outlines of the body; the other full lines indicate the position of the diaphragm, heart, and stomach during full inspiration; broken lines show position in expiration.

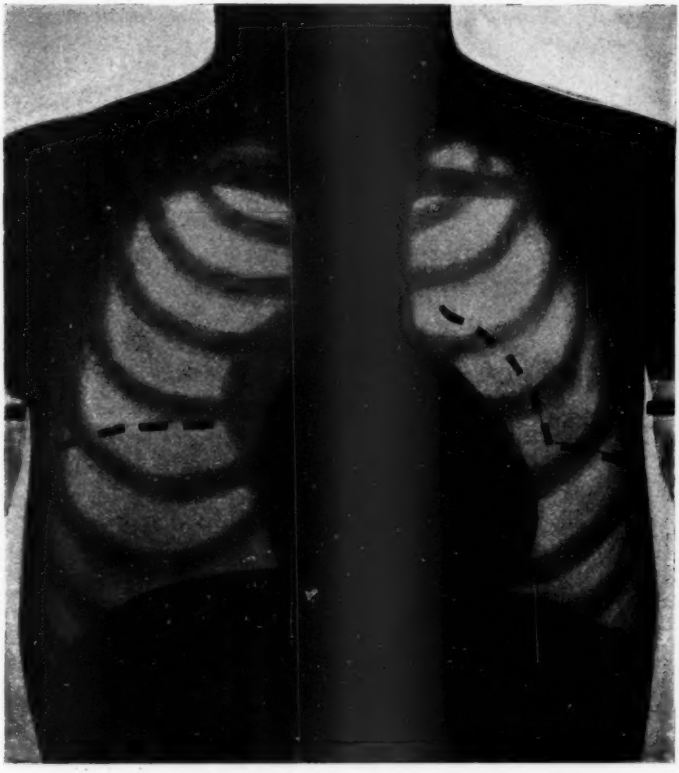
Mr. W. B. Cannon, student in the Harvard Medical School, who has published an excellent article on the movements of the stomach in the cat studied by means of the Röntgen rays, has made with me some observations on the size and shape of the stomach in human beings during digestion, which are as yet unpublished.

One of their most useful medical applications is for diseases in or contiguous to the thoracic cavity. I shall consider this subject largely from the stand-point of a practitioner whose special interest is diseases of the chest, for it was the confidence which I had in the possibilities of the fluoroscope to assist in the diagnosis of diseases of the lungs and heart that led me to begin and develop this method of examination.

I think the subject can be most clearly presented by the following cuts, Figs. 2 to 6, inclusive, and Fig. 9, which are reduced copies of diagrams made by transferring outlines that I drew on the skin of patients while looking through the fluoroscope, to a skeleton outline copied from one of Luschka's plates. The patients were examined lying down, except the one suffering from pneumo-hydrothorax.

Since it is in part the *movement* of the heart and lungs which we wish to observe, an X-ray photograph does not answer as well as the fluoroscope or fluorescent screen. Examinations with this instrument have also the advantage of being made more quickly. The photograph takes time to develop, but gives more detail in parts that are at rest.

FIG. 2.



Normal thorax in full inspiration; the broken lines show position of diaphragm and heart in expiration, but the diagram does not indicate that during this time the light area is narrower.

The position of the diaphragm and heart are shown as in full inspiration in the diagrams, Figs. 2 to 6, inclusive, and Fig. 9, and the broken lines indicate the position in expiration. The dark lines at the sides represent the level of the nipples. The anode of the Crookes

tube was placed under the median line where it is crossed by a line joining the nipples.

In health (Fig. 2) it will be seen that the diaphragm has a wide excursion between the extremes of respiration, and that the heart also changes its place. In order to show what nice distinctions the fluoro-

FIG. 3.

Pleurisy. With large effusion. The heart in this patient was enlarged and displaced and the movement of the diaphragm was lower down and restricted. After the tracing for this diagram was made a gallon of fluid was withdrawn from the right side, the heart was then seen to be nearer its normal position, and the excursion of the diaphragm on the left side was much greater than before, that is, nearer the normal. Broken line shows position of the diaphragm in expiration.

scope is capable of making let me state that the difference in the brightness of the lung area between expiration and full inspiration may be perceived in the fluoroscope. In health the lungs are seen to be lighter about full inspiration and darker in expiration, as they then contain

more blood per cubic inch. This shows how conditions involving congestion, as in early tuberculosis or in some forms of cardiac disease, may alter the appearances in the fluoroscope.

The diagram of health (Fig. 2) is the key to the others, and should be used as a starting-point in studying them further. The diagram of each of the diseases should be compared with the diagram of health,

FIG. 4.

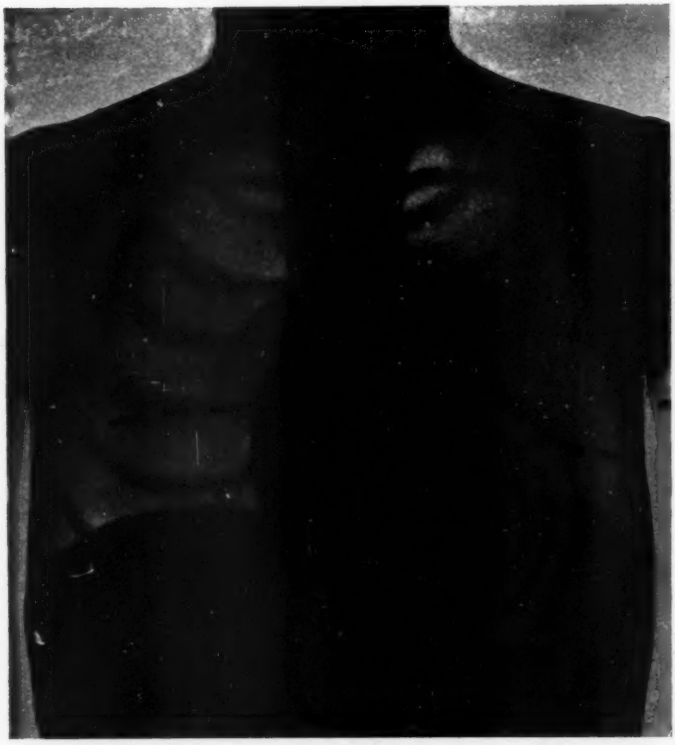
Pleurisy. With small effusion. The presence of fluid on the right side in this patient was doubtful by auscultation and percussion.

especially the amplitude of the excursion of the diaphragm and its position in the thorax in certain of them. In fifty adults I have found the average excursion to be two and a half inches on the left side and an eighth of an inch more on the right. In young adults the excursion was greater than in older individuals.

We will begin with *thoracic aneurism*.

Many thoracic aneurisms which were formerly beyond our reach for diagnosis may now be recognized with certainty, and, further, symptoms due to aneurism are sometimes ascribed to other diseases, and an X-ray examination is required to establish the diagnosis. One of my diagrams represents the condition found in a patient sent to me in con-

FIG. 5.



Pneumonia. Seventeenth day of disease. Dark area and restricted movement of the diaphragm on the left side; the movement is also less than in health on the right side. The dark area diminished gradually, and the excursion of the diaphragm on both sides increased from week to week.

sultation, who had a stricture of the œsophagus and into whose throat an œsophageal bougie had been passed every third day for months. Another patient, who had a similar aneurism, was thought to have intercostal neuralgia, and had been operated on for this previous to coming to me. In one of my own patients with cardiac disease I was

about to give digitalis, but an X-ray examination showed the presence of a thoracic aneurism in an early stage, and I was thus spared from doing him harm. In no other way than by an X-ray examination could these aneurisms have been detected in this early stage.

In emphysema I have pointed out that the excursion of the diaphragm is less than in health and that it is lower in the chest. The heart is in a more vertical position than in health, and moves less between full inspiration and expiration. In marked cases the right side of the heart, both auricle and ventricle, is larger than normal.

In pleurisy with large effusion (Fig. 4) the heart is much displaced, as indicated by the diagram.

In pleurisy with slight effusion (Fig. 5) the appearances in another patient are shown.

Adhesions of the pleura without thickening would not obstruct the passage of the rays, and therefore could not be seen in the fluoroscope, but might be suspected if the movements of the diaphragm were restricted.

Auscultation and percussion may leave us uncertain whether we have to deal with an adhesion with thickening or with a pleuritic effusion, but the fluoroscope can usually tell us if fluid is absent unless it is encysted. If present the diaphragm line is obliterated on the side of the effusion, especially in the outer portion, where this muscle curves down to the side of the chest, because fluid would sink and fill in their lower and outer angle unless it were encysted. The ability, then, to follow this portion of the diaphragm line proves the absence of fluid except in the particular case just mentioned. Even in such a case I have suspected the presence of fluid by means of the fluoroscope, and this suspicion was confirmed in one case by an autopsy and in another by tapping. The X-rays enable us to choose the most desirable place for inserting the needle.

Calcareous deposits in the pleura are seen as dark areas in the fluoroscope. This is also true of some calcareous deposits in the aorta or in certain portions of the heart.

In *pneumonia* (Fig. 6) the dark area of the pneumonic process is seen, and, further, the excursion of the diaphragm is less than normal. The appearances in pneumonia are very conspicuous, so much so that I have not chosen a patient in the most active stage of the disease, but rather during its subsidence. This diagram was made from the appearances on the seventeenth day of the disease. No signs were found by auscultation and percussion on this day. This shows that there may be conditions in the chest which are readily seen in the fluoroscope, but which are not patent to auscultation and percussion On the thirty-second day there were still signs of disease by the fluoroscope, but the patient was then discharged, otherwise an abnormal condition of the

lungs might have been followed by means of this instrument for some time longer. In cases that I have examined after their discharge from the hospital the lungs attained their normal brightness before the excursion of the diaphragm was normal.

FIG. 6.

Pulmonary tuberculosis. Right side. The excursion of the diaphragm is restricted. and restricted in the upper part of the excursion. In emphysema it is restricted in the lower part.

Central Pneumonia. I have recognized the presence of central pneumonia with the fluoroscope before there were any signs upon auscultation and percussion.

Pulmonary Tuberculosis. It seems hardly necessary to state that the diagnosis of pulmonary tuberculosis is not made by an X-ray examination alone, but the fluoroscope may show that the lung is in an abnormal condition in two ways; the diseased portion appears darker than

in health, and the excursion of the diaphragm in quiet breathing and in full inspiration is restricted, and restricted on the lower side—that is, it is higher up in the chest. These signs lead us to suspect tuberculosis. It is well to make a second examination after an interval of a few days, for both of these signs may sometimes be found temporarily in other conditions, as in anæmia and debility, and after typhoid fever. Whether they may then indicate a soil favorable to the development of tubercle bacilli I will not now discuss. Also a diminished excursion of the diaphragm may occur in emphysema; but in this case the muscle goes lower down in the thorax, not higher. I have taken every opportunity to examine patients with tuberculosis in the early stage, and have often found evidence of disease more marked in the fluoroscope than by auscultation and percussion. (When the disease has made progress the appearances in the fluoroscope are, of course, very conspicuous.) In the patient from whom the *diagram of tuberculosis* (Fig. 6) was made, the excursion of the diaphragm was more restricted than usual in an early stage of this disease, and the apex is darker.

Further, I have found suggestion of tuberculosis in some patients when auscultation and percussion had not revealed it, and whom I examined with the fluoroscope with reference to some other disease. This diagnosis was confirmed by the subsequent development of the case, the presence of bacilli, or by reaction to the tuberculin test.

The dark areas which are found in the lungs in pulmonary tuberculosis are not wholly due, I think, to a consolidation, for a marked congestion may give rise to similar appearances. In some patients whom I have examined at intervals of a week or two during some months I have seen these dark areas extend rapidly, and in others diminish in the same way, and as it does not seem probable that changes in the lung-tissue would take place so quickly as the increase and decrease of these dark areas would suggest, a congestion seems to be the natural interpretation of this relatively rapid alteration in the brightness of the lung. Further, in passive congestion of the lungs in mitral disease the lower portions of these organs may be darker than normal without corresponding physical signs; and, after rest and the administration of digitalis, the lungs soon become clear;[1] also in patients apparently suffering from debility, and who do not react to tuberculin, we may find a dark area in the lung that clears up after a rest of a week or two. The recognition of a

[1] I examined normal lungs after they were taken from the body, with the fluoroscope, and found they were penetrated by the X-rays with the greatest ease. There was no marked difference in brightness between a fully and a partially distended lung. In life the lungs are brighter during full inspiration than expiration. This greater brightness is due to a diminished amount of blood in an equal volume of lung at this time. These observations, together with others bearing on this subject are referred to in my article entitled "A Study of the Adaptation of X-rays to Medical Practice." Medical and Surgical Reports, Boston City Hospital, January, 1897.

congestion, especially at the apex, may be valuable in some cases, as an early warning of the beginning of tuberculosis, and it should certainly cause us to make a careful investigation, with this diagnosis in mind.

Among the cases of pleurisy with effusion that I have examined with the fluoroscope there were some in which a darkened area of the lung and a diminished extension of the diaphragm led me to suspect tuberculosis when it had not been detected by physical examination. This suspicion was afterward confirmed in certain cases by the tuberculin test or by the finding of the bacilli.

As the X-ray examinations in pulmonary tuberculosis come more into use I am convinced we shall sometimes recognize its presence earlier, and be less apt to overlook the disease in its beginning.

The following cases are chosen to illustrate some of the ways in which X-ray examinations may be useful in pulmonary tuberculosis.

In this patient (Case I) the signs in the fluoroscope were more marked than were the physical signs.

Case I.—Lawrence C., aged twenty-eight years. Entered the Boston City Hospital April 14, 1898. Mother died of phthisis; history of several hæmoptyses. March 31, coughed up blood several times; says he lost about a pint.

April 14th. Physical examination: Harsh respiration over both fronts, otherwise no physical signs.

14th. X-ray examination: Marked darkness over upper two-thirds of left chest. Excursion of diaphragm one and one-half inches on left side; two inches on right side.

17th. Physical examination: Respiratory sounds less pronounced than normal on both sides, otherwise no physical signs.

19th. No change in sounds by auscultation and percussion.

19th. Second X-ray examination: Similar to that made on April 14th, but more marked.

The patient was given one-half milligramme of tuberculin, and reacted to it, the temperature rising to 102.4° F. in eighteen hours.

Case II.—George S. B., teacher, aged thirty-two years. Had lost his mother and one brother by tuberculosis. Hæmoptysis June 5, 1897. In Dr. Folsom's service in Boston City Hospital for ten days. Nothing found in his chest. Subsequent to June had several slight hemorrhages. In July Dr. Smithwick found a few small, fine râles above the right clavicle.

September 17th. Dr. Smithwick found no râles at right apex, but thought he found a few in the right axilla; otherwise there were no physical signs. Said "the patient might be examined to-day without any signs of tuberculosis being detected;" no rise in temperature; no tubercle bacilli found, though the sputa had been examined several times. Dr. Smithwick brought the patient to see me on September 17th.

17th. X-ray examination: Right apex to lower border of second rib was darker than the left apex. Excursion of diaphragm on right side one and three-eighths inches; on left side two and three-eighths inches. This, together with what had gone before, led me to state I had little doubt the patient had tuberculosis.

October 3d. Dr. Smithwick found tubercle bacilli.

Bacilli had been found in this patient (Case III.) just before the X-ray examination was made, but it is of interest to compare the signs found in the fluoroscope with those by auscultation and percussion.

This patient has been under the careful observation of Dr. Buckingham, Dr. C. F. Withington, or Dr. H. Jackson for some months at the Boston City Hospital.

Case III.—L. B. C., aged twenty-nine years. Nurse in Boston City Hospital. Patient in Dr. Withington's service. Admitted May 11, 1898. For the past two months patient has had cough, with yellowish expectoration; about one week ago sputum was streaked with blood; slight dyspnœa after exertion. Patient thinks he has not lost weight or strength—no chilly sensation; no sweating; appetite fair.

May 11th. Physical examination: Heart not enlarged to the right or upward; apex in fifth space in nipple line; action regular; lungs normal save that breathing is somewhat jerky in places and fremitus is slightly increased all over the right chest. Otherwise physical examination was normal.

12th. Few râles at inner edge of left scapula; no difference in fremitus or in voice.

14th. An occasional, indeterminate râle here and there over the chest, not permanent in character; no abnormality in breathing or voice; resonance good.

15th. Breathing very little modified qualitatively. Occasionally râles as before, and after cough they are more numerous in right axilla than elsewhere. Tubercle bacilli found in sputum.

16th. I was asked to make an X-ray examination, which was as follows: Whole of right lung darker than left, *especially at base.* Excursion of diaphragm on right side seven-eighths of an inch; on left side two and five-eighths inches.

August 22d. Dulness at both apices and moist, bubbling râles; moist râles also present in both axillæ. Right apex, bronchial breathing, with increased resonance and fremitus. Process is diffuse in both lungs, but most marked in right.

X-ray examination: Right side much darker throughout than the left. Excursion of the diaphragm one-quarter inch on the right side and three-quarters of an inch on the left.

The fluoroscope afforded evidence of tuberculosis (Case IV.) where the physical signs were not conclusive.

Case IV.—Murdock M., carpenter, aged twenty-three years. Outpatient of Boston City Hospital, September 17, 1896. History of two hemorrhages; one four years ago and one a year ago. Now complains of pain in right chest, with slight cough and slight expectoration. Physical examination by Dr. Ames was negative, except for a few "clicks" at the junction of the second rib and the sternum on the right side and at left apex behind.

September 17th. The patient was brought to me for an X-ray examination, which was as follows: Two-thirds of right lung, beginning at apex, darker than normal, as well as apex of left lung. Excursion of diaphragm shorter and higher up than normal on the right side.

October 3d. Physical examination by Dr. Tenney: Slight dulness at

left apex, back and front, with harsh respiration and increased voice sounds. It was learned at this time that the father and three brothers had died of phthisis.

Two examinations for tubercle bacilli had been negative.

In this case (Case V.) I was in doubt as to a diagnosis until after the X-ray examination.

Case V.—H. C., aged twenty-six years, entered the hospital January 24, 1898, in Dr. Shattuck's service. Family history negative. Had not felt well for three weeks. Headache, pain in back, anorexia; pain in stomach for two weeks. Had been in bed three days prior to entrance. Epistaxis four days before entrance; bowels regular; no cough. Pulse 80, respiration 20. Temperature 101° F. Heart: Right border at middle sternum; left border three centimetres inside nipple line; apex two centimetres inside nipple line; sounds normal. Lungs: Resonance and respiration good throughout; no chest symptoms whatever; spleen not felt; abdomen tympanitic; tenderness more marked on right side. Widal's serum-test was made eight times, always with a negative result; leucocyte count normal; no arsenic or lead in the urine.

February 12th. The patient was in my service from February 1st until his discharge. The finger-ends are markedly clubbed.

X-ray examination: Both sides of the chest darker than normal; no special area markedly dark, but rather the darkness was uniformly distributed. Excursion of the diaphragm: On the right side, one and three-quarter inches from upper border of the fourth rib to upper border of fifth rib; on the left side, one and one-quarter inches from middle of fourth rib to upper border of fifth rib.

25th. Patient is losing ground; has no pain, no cough, appetite good.

March 3d. Resonance: Both front and back unusually good; suggests emphysema rather than consolidation; no râles.

4th. Still losing weight; no improvement.

X-ray examination: Right side darker than left throughout. Upper two-thirds of left chest so dark that the ribs are barely seen, and only during full inspiration; diaphragm barely seen on inspiration on right side; on left side, seen only during inspiration.

7th. Resonance over both fronts is increased rather than diminished; respiration normal, expiration not prolonged; resonance and respiration over backs normal.

8th. Since admission the temperature has run an irregular course, and the patient has grown weaker and thinner. (Four days after entrance the temperature rose to 104½° F., varied for ten days from 99° F. to 102° F., then from 102° F. to 103° F. for six days; after which it was very irregular for several weeks, varying from normal to 103° F.).

10th. Respiration over a small area in right front, just below clavicle, is harsh; tactile fremitus slightly increased; no râles. Resonance not so good over right base behind as elsewhere, and respiratory sounds are diminished.

11th. X-ray examination: Right side darker than left during respiration; lung nearly as dark as liver; only a portion of left border of heart is seen. Diaphragm on right side moves one inch; on left side one and one-eighth inches.

20th. There has been much improvement; patient is now up.

April 4th. X-ray examination: Both chests clearer than at last X-ray examination; ribs can now be seen on both sides; both borders of heart seen; diaphragm on right side moves one and one-quarter inches; on left side, one and one-eighth inches.

19*th. X-ray examination:* Outline of the heart and all of the ribs seen clearly. Excursion of the diaphragm: Right side, one and three-eighth inches; left side, one and one-half inches.

Temperature has been between normal and 100° F. for nine days, and the opportunity was given to try the tuberculin test. One-half milligramme of tuberculin was injected; temperature rose to 102.8° F. eighteen hours later, and then fell to 99.5° F. Malaise; patient complained of feeling sore all over.

To recapitulate: This patient's illness began about January 1, 1895. He was first thought to have typhoid fever, but later this diagnosis was regarded with suspicion. During February he failed very much, had to be fed for about three weeks, was losing in weight and strength, and I gave a very unfavorable prognosis to his relatives. On March 8th the outlook for the patient's recovery was still less hopeful, but on March 20th he was up and dressed. No definite diagnosis was made until February 12th, when the diagnosis of acute miliary tuberculosis was made. On April 19th, as already stated in the physical examination, he reacted to the tuberculin test. The patient was discharged from the hospital on April 22d. He gained in weight and strength, although still rather thin; color good.

June 24th. Has gained three pounds in the past four weeks.

X-ray examination: Excursion of diaphgram: Right side, one and three-quarter inches; left side, one and five eighth inches.

In the following patient (Case VI.) the increase in density was detected earlier by the fluoroscope than by any other method in each lung successively:

Case VI.—John M., aged nineteen years, entered the Boston City Hospital in February, 1897. At entrance there was good resonance and respiration throughout both lungs.

March 12th. I made an X-ray examination because he had pericardial effusion, and found the excursion of two inches on the right side and two and one-half inches on the left side. (In health the excursion on the right side is usually greater than on the left.) From the apex of the third rib the lung was denser than on the right side. On the same day there were no signs by auscultation and percussion.

21*st.* The whole of the right side was darker than the left; the excursion of the diaphragm could not be followed on the right side; on the left side it was two and one-half inches, as on March 12th.

April 13th. He reacted strongly to tuberculin.

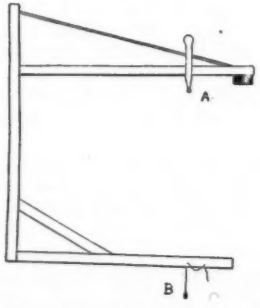
27*th.* The whole of the right side was dark, and the excursion of the diaphragm could not be followed. The left apex was darker than the normal from the apex to the fourth rib, and the excursion of the diaphragm was one and three-quarter inches. At this time there were no signs by auscultation and percussion at the left apex.

The patient had been about as usual in weight. There was almost no cough. Four months after entrance no bacilli had been found, although a number of examinations for them had been made.

In *pneumohydrothorax* when the patient is sitting up the fluid is seen in the fluoroscope to be level, as in a tumbler, but it becomes inclined and the heart is displaced. The level of the fluid changes as the patient bends backward and forward. When he is gently shaken the splashing of the fluid is clearly seen, and while quiet the waves made by the heart beat are very visible on the surface of the fluid. In the summer of 1897 I demonstrated this to Dr. Buckingham, who related what he had seen to other medical men, but they could not be induced to believe it was not a joke.

In *pneumothorax* the diaphragm on the affected side is much depressed, and its movement during respiration slight; the heart is in the portion near the median line, pushed to the other side.

FIG. 7.



Indirect plumb-line (one-sixteenth inch, equals one inch). A form of plumb-line to be used when the patient is lying on the stretcher, to determine the exact position for the Crookes tube when it is desired to place it directly under the point to be examined.

This instrument is made of strips of cedar one-eighth of an inch thick and one inch wide; there is a counterpoise of lead on the end of the arm beyond A; the vertical piece, from which the arms A and B extend, is made of two strips of cedar fastened at either end and separated three-quarters of an inch in the middle by a piece of cork. This is done to give stiffness.

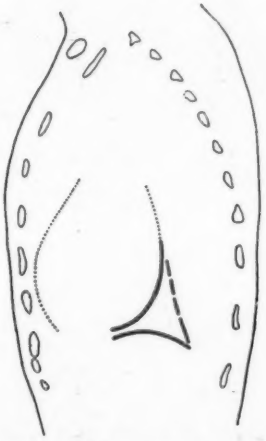
A piece of thin wood about two inches square, with a depression in the centre (not shown in the figure) is placed on the patient, so that the depression is over the point to be examined, directly under which it is desired to bring the Crookes tube. The rounded point, A, is placed in the depression, and the rest of the apparatus swinging free, the weight B will hang directly under the point A, and the position for the anode is just under the weight B.

Let us now take up X-ray examination in diseases of the heart, and, first, recall that the normal heart is a very movable organ; that it varies in size and position within certain limits; that it is readily pushed out of place, and that the direction of its long axis is not always the same; in some persons the axis is more inclined, in others more vertical. The heart is seen to change its position during deep inspiration, being moved downward and inward.

Triangle. While looking through the body from side to side during

deep inspiration, a light triangular area[1] (Fig. 12) comes into view, the sides of which are formed respectively by a part of the heart line, of the diaphragm line, and of the spine, or, rather, of what lies anterior to the spine. This last line is less defined than the two others. This triangle varies very much in size and in shape in different indviduals, and also varies according to the side on which the observer stands. It is smaller, when seen through the fluoroscope, on the left side than on the right

FIG. 8.



Triangle. The outline of the body and the ends of the ribs have been traced from an anatomical plate which represents a section of the body through the left parasternal line. The heart-line and the outlines of a portion of the diaphragm and spine, or rather what is in front of the spine (this third line is less defined than the other two) form the triangle, and were drawn by means of the fluoroscope on the left side of a patient during full inspiration, and then sketched in about the proper position on the drawing from which this diagram is made. This triangle is usually closed on the anterior side, although it did not happen to be in this patient. It will be seen that the outline of the heart is indicated partly by a full and partly by a dotted line. The full line shows the extent of the border usually seen in the fluoroscope in health, the dotted line the additional amount seen in this special individual in health.

side. In a patient with a transposed heart this condition was reversed, the triangle being smaller when seen from the right than from the left side. This was due to the fact that the transposed heart was nearer the right thoracic wall than is the normal heart, and it is obvious that the nearer the heart to the side of the body where the observer stands with the fluoroscope the smaller will the triangle appear.

The position of the heart is seen to be changed in diseases affecting

[1] Described in my paper entitled "X-rays in Medicine," read at the annual meeting of the New York State Medical Society, and published in their Transactions and in the Medical News, May 14, 1898.

the lungs, pleura, or bloodvessels, or by conditions in the abdominal cavity pressing the diaphragm up.

A lessened movement of the heart in deep inspiration may be seen to occur in emphysema, or where the pleura or pericardium is adherent. In one patient I saw the apex tilted up during deep inspiration instead of moving down. This was due, I suppose, to adhesions. We may

FIG. 9.

Passive congestion or œdema of the lungs.

thus follow some of the effects on the heart of changed conditions in its vicinity. A diminished or an abnormal movement of the heart during a deep inspiration may be evidence of adhesions.

Warning may be given by a passive congestion or œdema of the lungs of a serious condition of the heart or kidneys. Fig. 1 represents this condition, though it may be more marked than is shown in this diagram. The lower portions of the lungs are dark, the outlines of the diaphragm

cannot be seen, and only a portion of those of the heart. By such appearances as these I was led to warn one of my patients, who had renal disease, to put his affairs in order; he died suddenly within three months. By auscultation and percussion I had not appreciated the serious condition of his lungs.

Œdema of the lungs may be distinguished from early tuberculosis by means of the fluoroscope, as in the former the lower part of the chest on both sides is dark, whereas in early tuberculosis the darkness is usually on one side and at the apex.

In *pericardial effusion* the outlines of the heart may be obliterated, and instead of the usual pulsating heart we see a much larger dark area. The size, shape, and position of the pericardial effusion, and the fact that the outline of the pulsating heart cannot be seen assists in making the diagnosis. New growths about the heart and also in other parts of the thorax may be seen.

An enlarged heart, as in arterio-sclerosis or valvular disease, may be recognized in the fluoroscope, and also a heart smaller than normal, with which anæmia is sometimes associated, may be readily seen in the fluoroscope. It is, I believe, important for the physician to be aware of the existence of a small heart in any of his patients.

A transposed heart may easily be seen in the fluoroscope. During my recent service at the Boston City Hospital my house physician asked me to explain to him the conditions present in the heart of a patient who had been admitted the day before. I examined the patient, but withheld my opinion until I had made an X-ray examination, as the heart-sounds and murmurs were unlike any I had ever heard. On examination with the fluoroscope I found that the patient's heart was transposed; the left ventricle could be seen beating to the right of the sternum and the right auricle was on the left of the sternum. When the patient was turned around and the fluoroscope was placed on her back the transposed position of the heart was also very evident.

To arrive at a knowledge of the heart's condition in disease it is of importance to know its size as nearly as possible, and this can obviously be satisfactorily accomplished by means of the fluoroscope, except where pathological conditions partly obliterate the cardiac outlines, as in pleurisy with effusion or œdema of the lungs, for instance. Of course, in very stout patients or those with pulmonary emphysema it is often impossible to determine the size of the heart by percussion, but stoutness is no serious obstacle to an X-ray examination, and emphysema is a positive advantage. In fifty-eight patients who were not stout and had no emphysema—that is to say, in whom the conditions were not unfavorable for the use of percussion—I compared the size of the heart as obtained by percussion with that obtained by an X-ray examination. The percussion lines were drawn on the skin in

blue and the other lines in black. The outlines drawn by the aid of the fluoroscope were, of course, more complete than those obtained by percussion. The percussion lines varied considerably, in a portion of the cases—in some patients an inch or more—from the size of the heart as seen in the fluoroscope. Sometimes they indicated a smaller and sometimes a larger heart than the reality. Twenty-two of the fifty-eight patients had organic disease of the heart, and a more frequent disagreement in regard to one or both borders of this organ, as obtained by percussion on the one hand, and an X-ray examination on the other, was found among them than in the remaining thirty-six cases who were suffering from other than cardiac diseases. I am therefore satisfied that in some, particularly in cardiac cases, we have not determined with exactness the size of the heart by percussion, and unfortunately we cannot tell in which of our patients percussion will fail in accuracy. It is well, therefore, that we should realize this in those cases in which we desire precise information about the size of the heart.

In a patient with aortic insufficiency with a large left heart, I could see in the fluoroscope the great left ventricle making a large excursion between systole and diastole, and appreciate better than ever before what an extraordinary quantity of blood is delivered into the aorta with each systole in order to make up for the large amount which was sure to leak back during each diastole. Further, it could be distinctly seen that the excursion of the left side of the ventricle was diminished when a full breath was held, as then the heart was compressed by the lung. I refer to this patient (but it should be stated that in aortic insufficiency the appearances may be unusually marked in the fluoroscope) in order to indicate to you that it is now possible to examine more completely than hitherto patients who have or are feared to have cardiac disease.

To carry out this new method of examination[1] properly requires large

[1] I have found the following a convenient method of making X-ray examinations with an open fluoroscope screen:

The room should be dark, and even the light which comes from the Crookes tube must be excluded; this can be done by wrapping the tube in black velvet or enclosing it in a wooden box. Any other source of light, as the spark gap, should also be excluded. The fluorescent screen, twelve by fourteen inches, covered with a sheet of thin, perfectly clean glass, or a waterproof film, is then put on the patient's chest. With a lithographer's pencil (if the surface of the film is ground an ordinary pencil may be used) the outlines of the heart, for example, may be traced on the glass, and when a record is desired they may be copied by tracing them on paper. After cleaning the glass with alcohol it may be used again. The patient may be examined sitting up or lying down. My patients at the Boston City Hospital were brought into the X-ray-room on a stretcher which fitted on to the supports attached to the stand of my X-ray machine. If a patient is too ill to be moved he cannot very easily be examined, although that is possible by means of a portable X-ray machine. The anode of the Crookes tube should be at least two feet away from the patient when the thorax is examined, and usually under the point where the median line is crossed by a line joining the nipples; this position should be determined by plumb-lines. The median line is obtained by sighting from a permanent

and expensive apparatus and experience in using it with a considerable number of patients. There need be no fear of injury to any individual if the examinations are properly conducted. At the Boston City Hospital I have made more than two thousand X-ray examinations, and no one has received any injury or even inconvenience from them. It is easy to burn the fingers if they are put too near a candle, but it is not therefore dangerous to read by its light.

This new method of examining our patients has now passed the stage of mere interest and novelty; and in its own special field, if suitable apparatus is used, can be counted among our trustworthy aids to diagnosis.

A CRITICAL SUMMARY OF RECENT LITERATURE

ON

CHRONIC CONTINUOUS GASTROSUCCORRHŒA.

By D. L. Edsall, M.D.,
ASSOCIATE IN THE PEPPER LABORATORY OF CLINICAL MEDICINE.

The report by Reichmann[1] that he had discovered that continuous secretion of gastric juice was present in a man under his care, and that this continuous secretion seemed to be the cause of all his symptoms, followed by records of many similar cases by Riegel,[2] Jaworski and Gluzinski,[3] Honigmann and Reichmann,[4] excited criticism from Schreiber,[5] who denied that continuous secretion was abnormal, and reported that he had in a series of normal individuals obtained gastric-juice through a tube when they had fasted over night. Such a direct denial

plumb-line that is fastened to the middle of the support upon which the head of the stretcher is placed to another fastened to the support at the foot in the same way. The other line is determined by putting a string seven or eight feet long, with a weight on either end, across the chest from nipple to nipple, that is to say, on a level with the fourth rib. The line hangs down on either side of the patient, and the proper point is obtained by sighting as before from weight to weight; the anode may then be brought into line with the weights. The patient should be lying on his back when he is examined if the plumb-lines are used, but can be afterward turned if desired. In this reclining position the patient is perfectly comfortable and his strength is not taxed. I tested the correctness of the plumb-lines as a guide to the position of the tube by making two successive examinations, the patient getting up and the tube being removed after the first examination, and both patient and tube being rearranged for the second. The outlines of the heart and ribs traced by means of the fluoroscope in these two examinations differed only by the width of the line. An instrument which is a form of plumb-line that I have devised for determining the exact position of the tube when it is desired to place it directly under the point to be examined is shown in Fig. 7. This is especially useful where the median line is not available as a point of reference. I have used this instrument from time to time for more than a year.

I have described the method of examination in my article entitled "A Study of the Adaptation of the X-rays to Medical Practice." Medical and Surgical Report of the Boston City Hospital, January, 1897.

of previous physiological teaching and of the existence of gastrosuccorrhœa led to much work for and against Schreiber's view, Rosin[6] and Martins[7] supporting him, while Hoffmann, Pick, and Riegel[8] offered the results of their experiments to show that Schreiber's results were not usually obtained and were probably due to the irritation of the stomach-tube. Strauss[30] believed that previous writers had often called any fluid expressed from the fasting stomach gastric juice, and that by a critical examination of the records one could exclude all but about twenty of the positive results recorded. The decision of the question was of importance, Riegel and his followers holding that the hypersecretion interfered with the digestion of starches and caused gaseous fermentation and consequent atony of the stomach, and that it was itself an evidence of excessive excitability of the gastric mucous membrane, while Schreiber and his supporters contended that continuous secretion is normal.

Not long since Gintl[9] recorded the largest series of tests similar to those of Schreiber. He examined eighty individuals, and made altogether 189 tests. The result was wholly negative in twenty-six. In 146 there was less than 5 c.cm. Thirty-nine times there was from 10 to 50 c.cm., and three times from 50 to 100 c.cm. All the latter cases were subjects of gastric disease. In all cases the tube was allowed to remain in for from ten to fifteen seconds, and the patient made vomiting efforts. Most recently Riegel[10] has given the broadest and fairest consideration of the question. He repeated his former argument that even though in some apparently normal persons small quantities of gastric juice are obtained in the early morning through a tube, this offers no proof of a constant normal secretion, for the irritation of the tube may suffice to produce small quantities. Collecting the results of all investigations, he finds that only 6.75 per cent. of all supposedly normal cases examined have shown more than 20 c.cm. It is doubtful, too, whether the result would have been positive in many of these had the test been carried out more than once, and the result of a single introduction of the tube when the patient is unaccustomed to it cannot be considered final. He speaks of continuous secretion only when repeated tests give the same result, and more than 50 c.cm. of gastric juice free of food remnants is repeatedly removed from the fasting stomach. If such an amount is found, however, he considers it an evidence of a pathological condition, even though the patient has no symptoms. We have, he says, no more right to state that such an unusual state is normal to the individual than to consider that a glycosuria accidentally discovered is physiological. He agrees with Fleiner[11] and Westphalen,[12] that the use of irritant foods, common in certain localities, may explain the greater frequency of the disease in these places; but he holds that the irritant foods have then induced an abnormally excitable condition

of the gastric mucous membrane. Hyperchlorhydria often gives rise to few or no symptoms, and Riegel considers continuous hypersecretion an aggravation of hyperchlorhydria.

These conclusions may be accepted as fair, and for the present final. Another contention had arisen, however, originated by Schreiber's [5 13] theory that the fluid found was always the result of stagnation. v. Engelhardt believed this true, and had always found atony present.

Boas[14] had similar views, and supported them by feeding subjects of gastrosuccorrhœa by the rectum for several days. He found that this caused the morning secretion to disappear, and considered the result further evidence that continuous secretion was due merely to retention in the stomach and continuous irritation. Hemmeter[15] has recently repeated these experiments with the same result. They cannot be said to prove the point, however, since the theory of Reichmann, Riegel, and their followers had always been that the continuous secretion was due to excessive reaction to the irritation of the stomach contents, which produced continuous instead of temporary secretion. If food were entirely withheld from the stomach such irritation would certainly cease, and these experiments are as good an argument on one side as on the other.

Reichmann's[4] second case and one of Honigmann's were early examples of the existence of this condition without signs of gastrectasia. Riegel[8] stated that he had frequently seen the condition without any food stagnation. Debove[16] made a similar report, and Reichmann,[4] Bouveret and Devic,[17] and Roux[18] have all reported cases in which there were neither visible food remnants nor peptones in the fluid removed in the morning. A case has recently been published by Strauss[19] in which repeated examinations of the stomach before breakfast yielded always from 135 to 200 c.cm. of fluid which contained free HCl and was highly acid. Neither macroscopically nor microscopically could any food particles be found. Currant-seeds, introduced the evening before, had entirely vanished, and there was no gaseous fermentation of the fluid after forty-eight hours' standing in the oven. Tests for sugar and starch were entirely negative, but the biuret test was positive. The stomach was of normal size and shape, and in normal position. This and earlier cases are sufficient evidence that the condition may exist without any motor weakness, and the previous reports would seem to have negatived already Hayem's[21] enthusiastic support of the theory that gastrosuccorrhœa is due purely to obstruction to the passage of the stomach contents. In his first communication he divided the cases into the true and the false. The former, which he considered more frequent, he attributed to obstruction usually from ulcer and peripyloritis. If cases show severe vomiting, marked atony or dilatation, violent peristaltic movements, or many remnants of food, they should not be classed as

true gastrosuccorrhœa. The true examples of this affection are, he said, less severe cases. They rarely vomit, and show but slight atony, and no gross particles of food are found in the morning contents. Shortly afterward[22] he retracted this, and decided that gastrosuccorrhœa without obstruction does not exist, this statement being made on the basis of the conditions found in two cases which had shown the clinical syndrome and which he had considered to be due to pyloric spasm. Gastro-enterostomy was seen in both cases, and in one there was found inflammation and thickening of the walls of the duodenum, which he thought had probably caused obstruction. In the other there was a fibrinous exudate on the peritoneal surface of the duodenum and some adhesions of this portion of the gut. The duodenum was not opened.

Hayem at once decided that an incomplete obstruction below the pylorus is the cause of all cases not the result of pyloric stenosis. He advised operative interference in all cases showing the syndrome. These conclusions were surely unjustified when the lesions had been but imperfectly investigated, and but two cases were advanced in support of his view, and Robin[23] answered vigorously, opposing routine surgical treatment and insisting that pyloric spasm is the cause of many cases. He believed that operation is indicated only when there is organic stricture or a permanent and resistent spasm of the pylorus.

The diagnosis between atony and intermittent spasmodic stenosis, on the one hand, and permanent obstruction on the other, might be made, he said, by determining the consumption and outgo of nitrogen for a day or two. If permanent stenosis were present only about 50 per cent. of the nitrogen ingested would be recovered in the urine and feces, while in cases of atony or temporary pyloric spasm the entire amount would be regained. Unfortunately this is merely learning in a roundabout way that stagnation exists or does not, but Robin's references to Doyen's operative experience are important. In 100 gastric operations Doyen had seen sixty-one non-cancerous cases, and of these forty-six were spasm of the pylorus. Twenty-four of these were the result of the irritation of ulcers situated at a distance from the pylorus, but twenty-two were due purely to excessive sensitiveness of the mucous membrane. Robin reported five cases which he believed belonged to this latter group, all of which were cured by medical measures.

Hayem[24] has, however, continued to teach that the condition is due to pyloric or subpyloric stenosis. He reports another case in which operation had been performed for gallstones and in which symptoms of hypersecretion appeared subsequently. He attributed the hypersecretion to local peritonitis due to the passage of gallstones, and causing incomplete stenosis of the duodenum; and states that a diagnosis of incomplete subpyloric stenosis may be made if bile is constantly found in the fluid

expressed from the stomach in the morning. His views have not been subscribed to by others. Mathieu and Laboulais[25] agree with him in believing that many cases are due to ulcer, which causes motor weakness both from a resulting stenosis and from destruction of a portion of the wall of the stomach. Such cases are, in their experience, grave ones, while in the milder forms the ultimate stasis is the result of the hypersecretion, and it is of extreme importance to recognize the excessive excitability of the mucous membrane and to treat it. Pyloric spasm has come into prominence since Doyen emphasized its importance so strongly. Linossier[26] recognizes its importance, and Carle and Fantino[27] state that when the diagnosis of gastrosuccorrhœa is made they always suspect an organic or spasmodic stricture at the pylorus. They record nine cases which they diagnosed spasmodic stricture, because of the occurrence of attacks of forcible vomiting and violent peristaltic movements, while, when operated upon, there was no organic stenosis at the pylorus or below, and yet the stomach walls were hypertrophied. They consider Doyen's figures extreme, but believe that pyloric spasm is an important condition, and one that frequently may demand operation. As to the effects of operation upon the gastric secretions, they direct attention to the fact that in seventeen of eighteen cases operated on for benign stenosis the excess of HCl gave place to absence of the acid. A further illustration of the present-day tendency to operate in many gastric affections formerly considered fit for medical treatment only is seen in the very positive advice given by Strauss,[19] who considers operation indicated in all cases of gastrosuccorrhœa, whatever the underlying cause, if the use of proper diet, lavage, alkalies, atropine, and like measures has not resulted in distinct relief. He records a case of continuous gastrosuccorrhœa with gastroptosis and pyloric stenosis, but without stagnation of food, in which gastroenterostomy was done. The patient, who was gravely ill, died of shock, but Strauss urges operation in order to lessen the irritation by overcoming the prolonged retention of gastric contents, which always occurs in these cases. His view seems extreme, but it is less so than that of Hayem's, and is supported by Carle and Fantino.

Strauss' report contributes further knowledge concerning the condition of the gastric mucous membrane in this and similar conditions. The principal cells of the tubules seemed to have disappeared in part and to have been replaced by large numbers of the border cells. The epithelium was degenerated. There was marked round-cell infiltration, leucocytes being collected in especially large numbers about the necks of the glands. The connective tissue was increased and the glands were elongated and distorted, the vessels wide and tortuous. These changes are similar to those found by Korczynski and Jaworski,[28] Hayem,[29] Cohn-

heim [30] and Hemmeter,[31] in cases of hyperacidity, and by Popoff [32] in his important experimental work in the production of gastritis with hyperchlorhydria. Hence, it seems to Strauss that we may justly attribute the hypersecretion to these changes, which may be considered to be due to the excessive irritation.

The evidence that we have at present is sufficient to justify the conclusion that chronic continuous gastrosuccorrhœa exists and may be due to no organic change in the stomach that is discoverable clinically. Œstreich's [33] case of hyperchlorhydria of eleven years' standing, without changes in the gastric tubules, give some anatomical ground for believing that hypersecretion may at times be a pure neurosis, and clinical evidence to the same effect is at hand. Judging from what is now known, however, there is little doubt that there are generally anatomical changes in the mucous membrane, and atony or obstruction, with retention of food, ulcer, or some other anatomical cause of irritation, is usually present. The gastrosuccorrhœa is due to changes in the mucous membrane, which may be primary and finally produce ulcer or gastrectasia; or the latter may have given rise to the excessive irritation of the glands, and this to the gastrosuccorrhœa. There has been much earnest contention that gastrosuccorrhœa is not a disease, *sui generis* —an unnecessary contention, it would seem, since for years no one in authority has claimed that it is. Any mere alteration in the character or quantity of the gastric-juice is no more deserving of being called a disease than is, for instance, a polyuria.

Since Bouveret and Devic [34] claimed that tetany occurs as a complication of gastric disease only in association with hypersecretion, it may be noted that there has recently been added proof that this is not necessarily so, and that this supposed evidence of the reflex origin of gastric tetany, through irritation from excess of HCl, cannot be considered valid. Kuckein [35] records a case with absence of HCl, and still more recently Albu [36] reports a similar instance. The latter case is notable as the only certain instance of cure of gastric tetany by operation. Resection of the cancerous pylorus resulted in relief of the gastric distress, and the tetany disappeared and did not return. Albu, therefore, adds attacks of tetany to the list of indications for operation in gastric disease, but his advice must be justified by repeated successes before operation can be regarded as a proper course in a condition which is already so grave as is gastric tetany, and which is as yet by no means proven to be frequently subject to relief by operation.

Bibliography.

1. Reichmann. Berl. klin. Wochenschr., 1882, No. 40.
2. Riegel. Zeitschr. f. klin. Med., Band xi. und xii.; Deutsch. med. Wochenschr., 1887, No. 29; Ibid., 189.
3. Jaworski and Gluzinski. Zeitschr. f. klin. Med., Band xi.
4. Reichmann. Berlin. klin. Wochenschr., 1884, No. 2; Ibid., 1887, No. 12, 13, and 14.
5. Schreiber. Archiv. f. exper. Path. u. Pharmacol., 1888; Deutsch. med. Wochenschr., 1893, Nos. 29 and 30; Ibid., 1894, Nos. 18, 20, and 21; Deutsch. Archiv. f. klin. Med., Band liii.
6. Rosin. Deutsch. med. Wochenschr., 1888, No. 47.
7. Martius. Deutsch. med. Wochenschr., 1894, No. 32.
8. Riegel. Deutsch. med. Wochenschr., 1892, No. 21; Ibid., 1893, Nos. 31 and 32.
9. Gintl. Münch med. Wochenschr., 1897, No. 23.
10. Riegel. Die Erkrankungen des Magens, Wien., 1897.
11. Fleiner. Lehrbuch der Krankheiten der Verdauungsorgane, Stuttgart, 1896.
12. Westphalen. St. Petersburg. med. Wochenschr., 1893.
13 Schreiber. Archiv. f. Verdauungskrankheiten, Band ii.
14. Boas. Berl. klin. Wochenschr., 1895, No. 46.
15. Hemmeter. Diseases of the Stomach, 1897.
16. Debove. Médicine Moderne, 1895, No. 16.
17. Bouveret and Devic. La Dyspepsie par Hypersécrétion Gastrique (Maladie de Reichmann), Paris, 1891. Bouveret. Traité des Maladies de l'Estomac, Paris, 1893.
18. Roux. Gaz. des Hôpitaux, 1897, p. 610.
19. Strauss. Virchow's Archiv., 1898, Band cliv.
20. Strauss. Berlin. klin. Wochenschr., 1894, No. 41.
21. Hayem. La Presse Médicale, 1897, p. 141.
22. Hayem. Bull. de l'Acad. de Méd., May 18, 1897.
23. Robin. Bull. de l'Acad. de Méd., May 18 and 25, 1897.
24. Hayem. Médicine Moderne, 1898, Nos. 12 and 13.
25. Mathieu and Laboulais. Gaz. des Hôpitaux, 1898, p. 696.
26. Linossier. La Semaine Médicale, 1898, p. 65.
27. Carle and Fantino. Archiv. f. klin. Chirurgie, 1898; La Semaine Médicale, 1898, p. 269.
28. Korczynski and Jaworski. Deutsch. Archiv. f. klin. Med., Band xlvii.
29. Hayem. Gaz. Hebdom. de Méd. et de Chir., 1892, Nos. 33 and 34.
30. Cohnheim. Archiv. f. Verdauungskrankheiten. 1895, Band i.
31. Hemmeter. Archiv. f. Verdauungskrankheiten, 1898, Band iv.
32. Popoff. Zeitschr. f. klin. Med., Band xxxii.
33. Œstreich. Deutsch. med. Wochenschr., 1895; Vereins-Beilage, p. 145.
34. Bouveret and Devic. Revue de Méd., 1892. Bouveret. Traité des Maladies de l'Estomac. Paris, 1893.
35. Kuckein. Berlin. klin. Wochenschr., 1898.
36. Albu. Archiv. f. Verdauungskrankheiten, 1898, Band iv. Heft 4.

REVIEWS.

AN AMERICAN TEXT-BOOK OF DISEASES OF THE EYE, NOSE, AND THROAT. Edited by G. E. DE SCHWEINITZ, A.M., M.D., and B. ALEXANDER RANDALL, A.M., M.D., Ph.D., of Philadelphia. Illustrated with 766 engravings, 59 of them in colors. Philadelphia: W. B. Saunders, 1899.

A FEW years ago it was the exception to find a physician who devoted himself wholly to treating diseases of the eye or of the ear, or of the nose and throat; but as the knowledge of each of these subjects became extended, and the profession at large as well as the laity came to understand the importance of special treatment when any of the organs of the special senses were involved, the workers in these subjects found that if they would be familiar with the literature of their specialties and do full justice to the rapidly increasing numbers of those who consulted them, they had best become strict specialists and devote themselves to the study and practice of but one subject. As a consequence of this divorce, which was rendered necessary by the increase of our knowledge in all phases of medicine, the members of the different specialties formed newer and more natural associations. The ophthalmologist found that he was really of closer kinship with the neurologist or even with the clinician than with the aurist or laryngologist, and increased his knowledge in these fields. The rapid strides of pathology and bacteriology had also to be kept pace with, and the passing of the old combination of specialties was the inevitable consequence. In the smaller towns, however, where the number of people is limited and the scope of the specialist curtailed, it is still the custom to combine the three, and we fancy that the authors of the present work had this particular class of specialists in view when they decided to publish the work conjointly.

While many may doubt the expediency of including in one volume material which is devoted to the exposition of the three specialties, which, though formerly connected, are now generally and quite properly divorced from one another, no one, we venture, will gainsay the general excellence of the work which it is our pleasure to review, for the volume is a most delightful exposition of the subjects. The different articles are complete, forceful, and, if one may be permitted the term, "snappy," in decided contrast to some of the labored but not more learned descriptions which have appeared in the larger systems of ophthalmology. Being all from the pen of American authors, they have not suffered from the misinterpretations of translation, which, despite the greatest care of the translators, is almost inevitable when the authors are of different nationalities.

As a result of a careful study of the work, the reviewer is impressed by the excellent subdivision of the subjects and by the admirable judg-

ment which has been shown by the authors in their choice of collaborators. As stated in the preface, while the work is essentially a text-book, it may truly be said to be a volume of reference, containing a series of articles written by men who are authorities on the subjects portrayed by them; it is a tribute to the progress of American medicine, and is an excellent index of the familiarity which the members of the different specialities in this country have with the literature of all lands which bears upon their particular subject.

The first article serves as an excellent introduction to the work, being from the able pen of George A. Piersol, M.D., upon the embryology, anatomy, and histology of the eye. The subject is handled very carefully and conscientiously, and in the section which deals with the embryology of the eye, a familiarity is shown which indicates much patient research by the author. The next two articles, that on general physiology of vision, by Albert P. Brubaker, M.D., and that on general optical principles, katoptrics, dioptrics, physiological optics, by William S. Dennett, M.D., and Colman Ward Cutler, M.D., while devoting less space than is usual to this phase of the subject, contain all that is necessary for a clinical exposition. The next article, examination of the patient and external examination of the eye, functional testing, and one further on, upon operations, preparation of the region of operation, the instruments, and the dressings, anæsthesia, are by Dr. G. E. de Schweinitz, and are written in this well-known author's terse but lucid style. The next two articles upon the ophthalmoscope and its use, the normal eye-ground, by B. Alexander Randall, M.D., and methods of determining the refraction of the eye, ophthalmometry, ophthalmoscopy, skiascopy, optometry, the use of mydriatics, by Edward Jackson, A.M., M.D., complete the functional examination of the eye, and are three of the most important and most ably presented in the book.

The reviewer confesses to a degree of disappointment in Dr. John E. Weeks' article on diseases of the conjunctiva, for he hoped that this well-known pathologist and bacteriologist would have discussed the subject somewhat more fully from these stand-points. No doubt, however, the importance of impressing the student with the common varieties of conjunctival inflammation, from a clinical stand-point, compelled him to curtail a discussion which might be too scientific for his readers.

The introduction of a chapter upon amblyopia, amaurosis, and disturbances of vision without ophthalmoscopic change, by Casey A. Wood, M.D., is an innovation in a work of this kind, and has been happily disposed of by its author.

Dr. Randolph's article on diseases of the iris, ciliary body, and cho roid, sympathetic inflammation and irritation, and Dr. Duane's article on movements of the eyeballs and their anomalies, as might be expected from the previous communications which have been made by these authors upon the same themes, are most excellent expositions of these subjects.

The department of ophthalmology is concluded by an appendix containing five sections on subjects of recent development in ophthalmic surgery, which are not usually found in text-books, but which form valuable adjuncts to the work.

The majority of the articles on the ear, nose, and throat are excellent, and, taken as a whole, are a very meritorious collection, giving a very fair idea of our knowledge of these subjects at the present time.

The anatomy, embryology, and histology of the ear, by B. Alexander

Randall, M.D., is presented in a clear and concise manner. The cuts, especially the metal casts showing the intricate middle-ear spaces are especially good, most of them being original with the author. General therapeutics of the ear, by John E. Sheppard, M.D., is an excellent exposition of this subject, but the author's recommendation of a solution of caustic potash for the purpose of saponifying and softening epithelial masses in the external auditory canal is not altogether free from danger.

The illustrations of injuries and diseases of the drum-head are excellent, and the text is also good. The propriety of employing the eustachian bougie in chronic otitis media with eustachian obstruction is, however, questioned by many authorities, especially when accompanied by the local application in the tube of silver nitrate solution (gr. lx. to f℥j). Furthermore, the several methods of massage of the ossicles in chronic otitis media, a treatment which often gives excellent results, is scarcely mentioned, whereas the—as yet—doubtful intratympanic operations are given a prominent place.

The chapter on the complications of tympanic inflammation, by Herman Knapp, M.D., is well written, and probably represents the latest teaching on that subject. Operations for mastoid involvement are particularly well described and illustrated. The rest of the chapter on operations could be improved by a few more cuts.

The anatomy of the upper air-passages, including histology and embryology, by the late Harrison Allen, M.D., and Arthur A. Bliss, M.D., and the physiology of the upper air-passages, by Walter J. Freeman, M.D., are well written and cleverly illustrated. The article on methods of examination and diagnosis in diseases of the nose and throat, by John W. Farlow, M.D., seems clear, but could be improved by more cuts illustrating instruments and technique.

The chapter on therapeusis and diagnosis, by George A. Leland, M.D., accentuates a fact that is too often overlooked, namely, that many nose and throat affections are simply manifestations of constitutional diseases demanding constitutional rather than local treatment. Acute and chronic affections, by William E. Casselberry, M.D., and Morris J. Asch, M.D., are well described, the author of the latter chapter illustrating and explaining his own operation for deviated septum very clearly. His claim that the one procedure is suitable for every kind of deviation is certainly a very strong point in its favor. The chapter on diseases of the tonsils, palate, and pharynx, by James Edward Newcomb, M.D., is one of the best in this section of the book, affections of the tonsils being exceptionally well described.

The chapter on disease of the accessory sinuses of the nose, by Robert Cunningham Myles, M.D., is well illustrated. In the treatise on diphtheria of the air-passages, by J. H. McCollom, M.D., the treatment is clearly defined and the illustrations sufficient; antitoxin is given the prominent place it undoubtedly deserves.

The cuts in the article on laryngeal tuberculosis, by E. L. Shurley, M.D., are very good, and show the pathological changes which occur in that affection remarkably well. The text also is good.

Neoplasms and neurosis of the upper air-passages, by Jonathan Wright, M.D., are treated in an exhaustive but concise manner, and are thoroughly modern. The concluding chapter on operations, by John O. Roe, M.D., is excellent. W. C. P.

PROGRESSIVE MEDICINE: A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES, AND IMPROVEMENTS IN THE MEDICAL AND SURGICAL SCIENCES. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 490 pages, 28 illustrations, and 3 colored plates. Philadelphia and New York: Lea Bros. & Co., 1899.

THE editor of the series of volumes known as *Progressive Medicine* truthfully says in his preface that "the busy practitioner needs a well-told tale of medical progress in all its lines of thought, told in each line by one well qualified to cull only that matter which is worthy of his attention and necessary to his success. He needs an article which can teach him all that a master of a specialty knows of a year's work, and he does not need an immense quantity of material which, however interesting it may be from its novelty, possesses no intrinsic merit." This is the standard which Dr. Hare erects for himself, and it may be said in the beginning that the first volume of the series fulfils the requirements. American physicians have not been derelict in book-making, but they have not kept pace with their European confrères in the production of year-books, annual reviews, and periodical digests, such as Virchow's *Jahresbericht*, Schmidt's *Jahrbücher*, the *Jahresbericht der Neurologie and Psychiatrie*, and many other well-known critical reviews in the German, French, and English languages. The time, therefore, was very opportune for the presentation of such a work as the one under consideration. No one will be likely to deny that such productions are invaluable, not alone for the busy practitioner, but for the teacher and the maker of medical literature. At the present day it is wholly beyond the intellectual capacity of any individual to keep abreast with current medical literature, so enormous has it become and so widely scattered is it in almost innumerable publications. And although it may be said that, as a rule, the real advances in the medical sciences are published in a comparatively small number of medical journals, nevertheless special journals are so numerous that it is quite impossible for one who takes an interest in the different departments of the medical sciences to keep abreast of what is being done except through some such channel as *Progressive Medicine*.

This series will undoubtedly appeal to a very large number of the medical profession, particularly as the first volume merits unreserved approbation. Six subjects are considered, and each one by a physician whose previous contributions have associated his name with the respective subject in medical literature. The Surgery of the Head, Neck, and Chest is taken by J. Chalmers Da Costa; Diseases of Children, by Alexander E. Blackader; Pathology, by Ludvig Hektoen; Infectious Diseases, by William S. Thayer; Laryngology and Rhinology, by A. Logan Turner; and Otology, by Robert L. Randolph. Each of these sections is well done, and it would be invidious to compare them; but the reviewer should be permitted to say that the sections on pathology and on infectious diseases are altogether the best in the book. Dr. Da Costa has perhaps told the story of the progress in the surgery of the head, neck, and chest in a more personal way, thus meeting one of the objects of the editor, than has any of the other contributors. His review of the surgical treatment of exophthalmic goitre is particularly good. The surgical treatment of epilepsy is given much more space than it is enti-

tled to, particularly when contrasted with abscess of the brain, which is not handled so satisfactorily as most of the other subjects considered in this section. The most conspicuous shortcoming of the latter is the absence of any statement concerning the proven relationship of the segment of the middle ear, from which the pyogenic process starts to set up abscess of the brain, to the location of the abscess.

The section on Diseases of Children is very complete, but rather verbose. It could have been boiled down with great advantage. In this section a number of topics are taken up in detail which receive adequate consideration in other parts of the book. For instance, hydrocephalus treated by intracranial drainage, and abscess of the brain, are considered by Dr. Da Costa and by Dr. Blackader, both of them giving digests of the same contributions, while lumbar puncture, to which two pages are given in this chapter, is adequately described by Dr. Thayer on page 379. It is a little discouraging to read that "on the subject of the gastro-intestinal disorders of infancy many communications have appeared in the medical literature of the past year, but no important additions to our knowledge have been made," and then to have to wade through ten pages devoted to this subject. But, all in all, this section is very complete and reflects credit upon the author.

Dr. Hektoen has gone over the literature of the pathology of infection and pathogenic micro-organisms in an extremely complete and painstaking manner. Two colored plates and a number of illustrations add to the instructiveness of this chapter. Of course, it was to be expected that Dr. Thayer would give a thorough and instructive résumé of malarial fever, considering his recent excellent book on this subject, and the reader will not be disappointed. The pages on bubonic plague and on typhoid fever are deserving of particular mention and favorable commendation.

The only criticism that the section on Laryngology and Rhinology by Dr. Turner deserves is that the compiler has failed to put a personal stamp on the matter as distinctively as some of the other writers. Moreover, this chapter could have been advantageously compressed. Dr. Randolph gives an adequate review of the advances in otology, and particularly of the contributions that have been made to the anatomy and physiology of this organ. Here some lapping-over occurs, such as in infectious sinus thrombosis, which received consideration from Dr. Da Costa. The volume is provided with a moderately complete index, in which, however, a number of errors were detected on casual use. All in all, the volume deserves great praise, and will undoubtedly receive a hearty welcome. J. C.

La Thérapeutique des Empyèmes. (Treatment of Empyema.) Par le Docteur E. Cestau, Ancien Interne des Hôpitaux de Paris. Pp. 394. Paris: Georges Steinheil, 1898.

This work is divided into two parts devoted to (1) the recent and (2) the chronic empyemas. After a preliminary study of causation and bacteriology, the general evolution of empyema due to the pneumococcus, streptococcus, the tuberculous, the gangrenous, and the rarer

varieties due to the bacillus of Friedländer or of Eberth, are presented. Next the operative procedures, the different varieties of thoracentesis, of aspiratory drainage, of pleurotomy, each discussed under the titles of its proposer, are briefly and satisfactorily described. To this point we find simply a *résumé* of existing literature, covering 100 pages. The real value of the work lies in the next one hundred and fifty pages. Of these fifty are occupied with the consequences and accidents after operation. Aside from the accidents of operation, properly so called, and which are sufficiently well described in text-books, such accidents complicating infectious (abscess of brain) or nervous accidents, described under the clinical forms of syncopal, convulsive or hemiplegic, explained as toxic, mechanical or dynamic, are fully presented, and their treatment and prophylaxis briefly outlined. To the results of, and indications for, operations, an entire division is assigned. Here, again, thoracentesis, aspiratory drainage, and pleurotomy are taken up and their respective value in given cases determined. Still further, the indications from the bacteriological and anatomical stand-points are considered. On substantially the same plan the chronic empyemas receive attention. It is not often that a monograph so thoroughly satisfies the reader as this has done. The extensive acquaintance with existing literature as it has been made by the French, German, British, and, by no means the last or least, the American workers in the field, the broad view of the subject independent of school or theory, the carefully studied deductions all tend to make this a work of value to the physician as well as the surgeon. He who wishes to know the subject as it is to-day should study this book, and he who believes that one method is applicable to all kinds and conditions of empyema will learn that certain ends are best accomplished by varying means, of which this work gives full variety. While we must assent in general to the conclusions reached so carefully and painstakingly, we do not agree with the laudation of the phonendoscope as found on pp. 293 *et seq.*, and "which should be carried as well as the ordinary stethoscope." Nor do we believe that it should "be preferred to radiography." We are of the opinion that the slight importance attained by the phonendoscope after months of exploitation is not likely to be increased.

In closing this brief review we commend the book to the practitioner as complete, in general sound, and containing much that is helpful.

R. W. W.

A MANUAL OF OTOLOGY. By GORHAM BACON, A.M., M.D., Professor of Otology in Cornell University Medical College, N. Y. With an introductory chapter by CLARENCE J. BLAKE, M.D., Professor of Otology in the Harvard Medical School, Boston. In one handsome 12mo. volume of 400 pages, with 109 engravings and one colored plate. New York and Philadelphia: Lea Brothers & Co., 1898.

THIS excellent manual successfully attempts exactly what its size warrants, in giving to students and practitioners a brief but most practical introduction into the management of ear diseases; while specialists who already know the author's competence will be glad to have his suc-

cinct judgments upon the many points which are rather new or still unsettled. Radical where he sees his way clear, and sharp-cut in the expression of his views, Dr. Bacon is yet a determined opponent of the fledgeling "advances" which are constantly being launched for brief flight and destructive fall; and only those new ideas and methods of treatment which have rational basis and real applicability find here place except for words of warning or condemnation. Old methods have their deserved indorsement and precise description; but we must dissent from the advice that spraying with 4 per cent. cocaine solution should "in all cases" (if ever) precede catheterization. Some of the anatomical details have not the clearness which could be desired, and Leidy's epoch-marking demonstration, that the antrum is the posterior tympanic cavity, and not a mastoid cell around which has crystallized much of the advanced surgery of the ear, has not its due recognition. Yet the most modern of aural surgery is none the less well presented; for the author is one who has found that he must himself operate not only in mastoid empyemas, but in sinus-thrombosis and brain-abscess cases, and restore nasal patulency by removing adenoids and straightening septums, if he is to have them done as his knowledge of his cases shows to be best. The book well defines the advance ground of the skilful and daring yet really conservative otologist; and while not all of his colleagues and still fewer of his students can expect at once to be able to follow his lead, they will do well to go no farther, but strive to perfect themselves within the field which he has so well marked out.

B. A. R.

DISEASES OF WOMEN: A MANUAL OF GYNECOLOGY. DESIGNED ESPECIALLY FOR THE USE OF STUDENTS AND GENERAL PRACTITIONERS. By F. H. DAVENPORT, A.B., M.D., Assistant Professor in Gynecology, Harvard Medical School; Assistant Surgeon to the Free Hospital for Women, Boston. Third edition, revised and enlarged. With 156 illustrations. Pp. 391. Philadelphia and New York: Lea Brothers & Co., 1898.

FOR nine years Davenport's *Manual of Gynecology* has been of value to those members of the profession who do not perform gynecological operations, but who practise the minor treatment of diseases of women. Its third edition has been enlarged by a brief description of the principal operations of gynecology. In its present form it contains a clear and concise statement of the routine treatment of gynecological cases, including office applications to the endometrium, the fitting of pessaries, and other similar procedures. In treating of operations, notably the closure of the perineum, some excellent simple plates have been added which are of decided practical value.

The author has not, however, made the book a modern text-book, because many of the procedures which he describes are not now practised by those most thoroughly informed upon the subject. Some minor methods of treatment of distinct value are not mentioned in the book. Among them are general massage and Swedish movements for the corrections of displacements, pelvic massage for displacement and

adhesions, and the proper regulation of the patient's dress. We do not gather from the book that in making applications to the endometrium the most careful aseptic precautions are absolutely necessary if injury is to be avoided. We do not find mention of sterilization of specula and other such instruments before such applications are made.

Of the smaller books upon the subject this has been extensively used, and has been found of decided value. In its present condition it contains considerably more information than formerly. E. P. D.

RECHERCHES CLINIQUES ET THÉRAPEUTIQUES SUR L'ÉPILEPSIE, L'HYSTÉRIE, ET L'IDIOTIE. Compte-Rendus du Service de Bicêtre pendant L'Année 1897. PAR BOURNEVILLE. Paris: Aux Bureaux du Progrès Médical, 1898.

CLINICAL AND THERAPEUTICAL RESEARCHES ON EPILEPSY, HYSTERIA AND IDIOCY. Annual Report of the Bicêtre Hospital for 1897. By BOURNEVILLE.

THIS eighteenth volume of Bourneville's reports from his service at the Bicêtre maintains the reputation of its predecessors. The whole series, extending now from the year 1880, constitutes an enormous receptacle of data relative to the care and study of the epileptic and feeble-minded. As such it is unrivalled in the literature of medicine. The present volume is arranged much like those that have previously appeared. The first part is devoted to a history of the service during the year, both at Bicêtre and at the "Fondation Vallée." This latter institution, designed as a colony for epileptics and the more chronic cases among girls, has, owing to the needs of the service, not been entirely restricted to its original use. A separate report, covering the history of the work there, is included in this volume. The historical and statistical part of the present volume is replete with detailed information, and is especially valuable for those who are interested and engaged in the administrative work of hospitals and asylums for the insane and feeble-minded. It is quite impossible for us in the space at hand to give an adequate résumé of the report which constitutes Part I. of this volume.

The second part of Bourneville's volume is devoted to the clinical and scientific aspects of his work. This is a feature which is usually lacking in the reports of American asylums. It shows that Bourneville and his assistants are not entirely immersed in administrative details. Too much praise cannot be given for this feature of the report. It proves conclusively that there is little ground for the assertion, at least in France, that the time and opportunity for scientific research cannot be gained or utilized in large hospitals for the insane and idiotic. It is gratifying to note that this excuse is no longer so common in our American asylums as formerly, and that in some of them a high class of scientific work is being done and reported. These successive volumes of Bourneville are a constant incentive to such work wherever they are known. The recent splendid publications under the

auspices of the New York State Board of Lunacy are worthy rivals of Bourneville. In fact, we think they are quite superior to his volumes in the extent and thoroughness of the work done. In the present volume there is a series of clinical reports on interesting cases, accompanied, in some instances, with anatomical and histological studies. There are also some handsome plates of diseased and deformed brains. Among these reports the most interesting are those on epilepsy due to onanism, porencephalon, meningo-encephalitis, sclerosis and atrophy of the brain, hydrocephalus, and epilepsy consecutive to typhoid fever. These subjects are treated with more or less thoroughness, although, being founded usually on individual cases only, there is here and there some meagreness in this respect. This enumeration of the contents, however, will show the range and variety of the work, and may be sufficient to serve as an introduction to a volume the predecessors of which, as well as the worth of their distinguished author, are already widely and favorably known. J. H. L.

HISTOLOGY: NORMAL AND MORBID. By EDWARD K. DUNHAM, Ph.B., M.D., Professor of General Pathology, Bacteriology, and Hygiene in the University and Bellevue Hospital Medical College, N. Y. Illustrated with 363 engravings. New York and Philadelphia: Lea Brothers & Co., 1898.

IN this work both normal and pathological histology are considered; this is an unusual procedure. The subjects are necessarily but briefly discussed, and when we survey the immense field which is to be covered it is at once apparent that the book must be quite elementary. However, a large amount of information is crowded into the 439 pages of text.

In the part devoted to normal histology, comprising 239 pages, the author aims to call attention in a general way to the functions of the tissue elements and to emphasize "the close relations between cellular activity and structure."

The work thus assumes a practical character. 130 pages are devoted to pathological histology; only some of the general processes, such as the degenerations and infiltrations and structural changes due to damage, being taken up. There is a good chapter on tumors. About forty pages are devoted to histological technique.

The illustrations throughout the book are clear, though not many of them are original.

The publishers' work has been well done. C. A. H.

PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D.,

PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND,

AND

GEORGE DOCK, M.D.,

PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MICHIGAN.

Bronchial Asthma.—TALMA (*Berliner klin. Wochenschrift*, 1898, No. 52) believes that bronchial asthma is caused by a spasm of the muscles of the air-passages that can be voluntarily checked. It is assumed that a whistling ronchus, which is highest at the end of expiration, is one of the characteristic signs of asthma. This sound is transmitted from one place to another, and must originate in the larger air-passages—either the pharynx, larynx, trachea, or perhaps a main bronchus. Assisted by Zwaardemaker, Talma made numerous laryngoscopic examinations, with the following results: In all cases examined the glottis was wide open in the beginning, but at the end of expiration, when the murmur was highest, the vocal cords approximated. Moreover, the walls of the larynx above the glottis were tense and drawn together, the space between the posterior wall of the pharynx and the base of the tongue was lessened, as was also the space between the ary-epiglottic ligaments. It was obvious the whistling was produced by these stenoses. Drawing the tongue forward at once checked the rhonchi. A general narrowing of the trachea could also be seen, evidently produced by spasm of the muscle-fibres in the posterior wall; but Talma shows by measurements that contraction of these muscles in the trachea and main bronchi cannot account for the whistling and dyspnœa. He, therefore, thinks that spasm of the larynx and aditus, rarely spasm of the constrictors of the glottis, plays the chief rôle in asthmatic dyspnœa; spasm of the trachea and bronchi being of subordinate importance. Spasm of the bronchi he admits does occur, and is recognized by the presence of sibilant râles heard in different parts and independent of each other. The effect of volition on the constriction of the bronchi often makes the cause clear. Many persons can at once relax or contract the air-passages; but in many cases the conditions

are complicated, a bronchitis being associated with spasm, a spasm exciting bronchitis. The following facts bear on the treatment: 1. Spasms of the air-passages can be produced voluntarily by most asthmatics and by many normal persons. 2. A'most all asthmatics can suppress the spasms even during an attack, but especially during the remissions, so that along with vigorous respiratory interchange the abnormal breath sounds are absent. 3. The muscles of the air-passages are, or can be, placed under the control of the will. The following therapeutic suggestions are offered: Patients with asthma should practice respiratory gymnastics. They should learn to breathe deeply and slowly. It is usually necessary to teach proper expiration first. The inspiration during speech should be slow and deep, the speech should be slow and measured. Assistance from a trained instructor is very useful, but not absolutely necessary, during the whole treatment, which may require months.

Physical Diagnosis of Pleural and Pericardial Effusions.—SCHÜLE (*Münchener med. Wochenschrift*, 1898, No. 51) reports two very interesting cases of pleurisy with effusion, in which the friction rub of dry pleurisy was heard. Case I. had every sign of pleuritic exudate. Suddenly over the entire area of dulness a distinct pleuritic friction rub was heard. An exploratory puncture was made, and several c.cm. of exudate withdrawn. In Case II. the friction rub was diffuse, but especially audible over the lower part of the dulness. Fluid was demonstrated by several exploratory punctures. The author draws the entirely correct conclusion that circumscribed areas of lung and costal pleura were in contact, the exudate not being very great; also, that aspiration should always be practised in such cases.

The author has made experiments upon the cadaver that lead him to modify some of the commonly accepted ideas regarding the physical signs in pericarditis with effusion. Of the early signs of this disease a dulness over the manubrium is considered the most important. This phenomenon is usually explained by the pushing up of the fluid by the heavier heart. The author holds this idea to be incorrect. When water is injected into the pericardium of a cadaver it distributes itself evenly and presses on all sides, and not in the upward direction alone. When 150 c.c. of water are injected, dulness appears under the manubrium. The author's explanation is as follows: The pericardium resembles a long-necked flask, the neck surrounding the great vessels. Here the fluid collects relatively early and displaces the lung borders from the mediastino-costal sinus. At the same time the heart is surrrounded with fluid, and its area of dulness is increased to the right and left; but this is not so striking as the dulness, where formerly was resonance, under the manubrium. Œdema of the mediastinal tissues can produce a similar dulness of the manubrium, and sometimes occurs shortly before death. The artificial injection of the pericardium also furnishes some interesting facts about the shape of the dulness. It required about 250 c.cm. of fluid to produce the usual characteristic triangular-shaped dulness. It was especially distinct with 350 c.cm. When the pericardium was filled to its limit —700 to 800 c.cm.—the form no longer corresponded to that usually described. Instead of an obtuse-angled triangle, with sides extending from the jugulum

to the right mammillary and left axillary lines, respectively, the pericardium was distended chiefly to the left and downward, the right edge of the dulness being in the right sternoclavicular line. The author admits that in long-standing inflammatory processes the right wall may become yielding. In acute processes, however, such as hydro-pericardium or hæmato-pericardium, we have a condition similar to that in the cadaver, and we do not then have an equilateral triangle. He thinks that the compressed lung or a pleuritic exudate complicates the percussion findings more often than is thought, thus agreeing with Biernacki (*Volkmann's Sammlung klin. Vortr.*, 1897).

The Causes of the Healing of Tuberculous Peritonitis after Laparotomy.—HILDEBRANDT (*Münchener med. Wochenschrift*, 1898, Nos. 51 and 52) carefully reviews the numerous theories which have been presented as explanations for the results of laparotomy in tuberculous peritonitis, and discards them all as incapable of satisfactorily solving the problem. In order to discover how the healthy and diseased peritoneum reacts to known irritations he made the following experiments: Laparotomies were performed on healthy dogs and rabbits in a room at ordinary temperature. A marked increasing hyperæmia was noticed, the vessels pulsated actively, the serosa, which in the beginning appeared pale blue, took on a rose-red hue, and vessels previously almost invisible became distinct. A venous hyperæmia soon ensued, and the intestines became paralytic and distended. In operations under physiological salt solution at the body temperature there was only an arterial hyperæmia—no venous hyperæmia, distention, or paralysis. A tuberculous peritonitis was produced by injecting slightly virulent tuberculous material into the abdomen of rabbits and dogs. The effect of subsequent laparotomy showed itself in several ways: It checked the spreading of the process; it caused a disappearance of the tubercles; it prolonged life. Like Gatti, the author found that operations after injection, but before the appearance of tubercles, had no effect on the process. Following operation the author observed an involution of the tuberculous process, and in isolated cases a complete healing, with disappearance of the tubercles which he had seen in the laparotomy. In considering the bearing which these facts have upon the explanation of the cause of the recovery the author reminds us that there are tuberculous diseases of the peritoneum that heal spontaneously, and he believes that laparotomy only increases the natural healing factors. The venous hyperæmia which follows the laparotomy is more marked in the tuberculous than in the normal peritoneum. He draws an analogy from the fact that in heart diseases and kyphosis, venous hyperæmia has a curative influence on tuberculous processes in the lungs, as has passive hyperæmia upon similar processes in the joints, bones, and tendons, and concludes that venous hyperæmia, which lasts for days after laparotomy, is the important factor in the healing of tuberculous peritonitis.

Agglutination and Serum Diagnosis in Diphtheria.—J. BRUNS (*Berliner klin. Wochenschrift*, 1898, No. 51) has recently made a series of experiments on forty-four cases of diphtheria, with the object of testing the agglutinating property of the serum of diphtheria patients and the value of agglutination as a diagnostic measure. His results agreed in part with those of Nicolas,

who found the agglutinating principle present in antitoxin and in the serum of two men treated with antitoxin, but not in the serum of diphtheria patients who had not received injections of serum. In his series the author tested the serum of seven patients before they had received an injection of antitoxin, with positive results, differing in this respect from the results of Nicolas. In the whole series there were only two negative results. Agglutination was produced by dilutions ranging from 10 to 400. The same method was followed as in the Widal test. Cultures of twelve to sixteen hours were used, as older cultures gave pseudo-agglutination. A longer time is required for the reaction than in Widal's test. This is explained by the non-motility of the diphtheria bacillus. The diminution of the motility of the germs, so characteristic in the typhoid test, is of necessity wanting in this; the germs collect in small clumps, with the interspaces entirely free from bacilli. A direct proportion between the strength of the agglutinating power and the severity or length of the disease could not be proved. The following are the author's conclusions: Agglutination shows itself in the serum of patients sick with diphtheria, as also in antitoxin. Its presence is not constant for all diphtheria cultures and diphtheria serums. A clinical diagnosis by means of serum is impossible. A separation of diphtheria and pseudo-diphtheria bacilli by means of the specific immunity reaction is not possible. The pure, undiluted diphtheria serum possesses *in vitro* a slight power to limit the growth of diphtheria or pseudo-diphtheria bacilli, but no germicidal power.

Thyroid Gland and Myxœdema.—MENKE (*Berliner klin. Wochenschrift*, 1898, No. 51) discusses the supposed relation between myxœdema and the thyroid gland. He believes that we must go further back than the thyroid to find the cause of myxœdema, and thinks that perhaps in disease of the vascular system, with its associated disturbances of nutrition, we shall find the solution. Because of the striking similarity between old age and myxœdema, Vermehren believes that old age is a chronic myxœdema following degeneration of the gland, while myxœdema in the young is a premature senility. In both we find rough and dry skin, disturbed nutrition of the nails, teeth, and hair; slowness in speech, thought, comprehension, and movement; general anæmia; often pyschical disturbances and subnormal temperature, with very little tolerance against cold. The author takes issue with English writers, who believe that myxœdema is entirely dependent upon alterations in the thyroid gland. If this were so the disease ought frequently to be present in old age, since at this time of life atrophy of the gland is the rule; also it should follow suppuration of the thyroid, gangrenous thyroiditis, interalveolar sarcoma and carcinoma, and the more rare diseases of the thyroid, such as syphilis, tuberculosis, and echinococcus. In none of the cases reported were there symptoms of myxœdema. Mordret found in 131 autopsies on insane patients thirty-four cases of atrophy of the gland, and in none of them myxœdema. Naumann collected 408 cases of total extirpation of the thyroid; 309 remained well, twenty-six died of tetany, sixty-eight of myxœdema, four of tetany and myxœdema. Undoubtedly in some of the 309 cases there were accessory thyroids or remnants of the gland, but it is out of the question that this should happen in all of them. The

author reasons that if total extirpation is not always followed by myxœdema the thyroid cannot be the cause of myxœdema, or the gland must share its function with some other organ. He believes that disease of the circulatory system is the cause of this condition, and mentions especially the alterations of the capillaries, the arteritis, with atheromatous or amyloid degeneration and perivascular hemorrhages, so often noted.

[The author's recommendation that in future autopsies the condition of the vessels be more carefully examined, is valuable; but his criticism, while ingenious, leaves out of sight one of the most important grounds for looking on the thyroid alteration as the most important, viz., the results of treatment. His conception contains a hiatus that makes it useless as a working hypothesis.—G. D.]

Suprarenal Gland Extract as a Hæmostatic.—LERMITTE (*The British Medical Journal*, February 25, 1899, p. 467) says that the vaso-constrictor and hæmostatic action of the extract of the suprarenal glands has repeatedly been demonstrated in ocular and nasal surgery and in the treatment of skin diseases. A case of persistent epistaxis occurring in his own practice would seem to demonstrate another valuable practical use to which the drug may be applied. The patient was a boy, aged six years, who had suffered from severe epistaxis which had developed during the convalescence from a severe attack of diphtheria in 1894. Since then, and up to September, 1898, when he came under Lermitte's care, he had had on an average from three to four severe hemorrhages weekly. Various forms of constitutional, but no local treatment had been used without beneficial effect. Examination of the nasal mucous membrane showed a dilated and angiomatous condition of the blood-vessels. On September 17, 1898, Lermitte commenced treating the nose locally by inserting into each nostril a pledget of cotton-wool soaked in a 5 per cent. solution of cocaine, leaving them *in situ* for five minutes. On withdrawing these, similar pledgets, soaked in a saturated solution of boric acid containing five grains of dried extract of suprarenal gland to the ounce were inserted and left in for the same time. These applications were made on alternate days until October 7th (three weeks), then on every third day till October 31st (three weeks), and afterward on every fourth day up to November 22d, making in all twenty-four applications.

The immediate effect on the nasal mucous membrane was to produce a condition of ischæmia, and the epistaxis was immediately stopped. Up to the time of writing there had been no return of the epistaxis since the first application was made.

Palpatory Percussion, Etc.—E. BAELZ (*Berliner klin. Wochenschrift*, 1898, No. 48) publishes some practical observations in physical diagnosis. He draws the conclusion from its variety of forms and material that the plessimeter is of more than doubtful value, and in practice is well replaced by the finger. Similar objections have also made him give up the percussion hammer. He calls especial attention to the subject of palpatory percussion. This has not been used as much as it deserves, for two reasons: In the first place, because it has been used chiefly on an organ to which it is least applicable—*i. e.*, the heart; and, secondly, because its technique has not been understood.

He himself came to cultivate this method by noting the greater accuracy of the sense of touch than that of hearing in certain physical examinations. The method is as follows: The left middle finger is placed closely on the body, as in the usual finger percussion. The percussing hand is used in a different way from the usual one. The second, third, and fourth fingers are kept flexed at an angle of about 45°. From a distance of about 2 cm. the fingers are brought down on the left middle finger and kept there for a few seconds, after which the blow may be repeated. It is immaterial whether the percussing hand is moved from the wrist or elbow. The important points are that several fingers are to be used in percussing; that these fingers touch the plessimeter finger with the most sensitive part, or the tips, and that they are pressed against the parts examined. The perpendicular blow from the finger must therefore not be used. While percussing one must listen intently, as the sound produced is not loud. In fact, hearing is not essential, but the combined sensation of hearing and feeling is more complete than that of feeling alone. Like every other method, this requires a certain amount of practice. In the beginning it is useful to close the eyes, in order to notice fine points of difference. Palpatory percussion reveals most in connection with diseases of the lungs, pleura, spleen, and liver, and wherever, for any reason, strong percussion cannot be used, as in perityphlitis and cholelithiasis. It is also safer whenever there is risk of hæmoptysis. In the case of pleurisy with effusion the upper border will usually be found by this method two finger-breadths higher than the line of absolute dulness. An enlarged and inflamed gall-bladder can sometimes be made out by this method, when simple percussion would not be possible on account of the pain. The spleen is especially well demonstrated by palpatory percussion, although this may sometimes give uncertain results on account of distention of the stomach or intestines.

Baelz also advises a wider use of direct auscultation than is commonly practised, especially on account of the possibility of hearing more distant sounds and of distinguishing the relative distances of sounds, such as râles and friction sounds. He also claims that certain heart murmurs, especially the diastolic murmur of aortic insufficiency, can be heard better with the ear than through the stethoscope. In case of aneurismal murmurs, direct auscultation has the great advantage that the head applied to the chest is more sensitive to the thrill and impulse than the hand.

[Many of Baelz's suggestions have long been familiar in the United States —especially his remarks in regard to the value of finger percussion. It is doubtful whether palpatory percussion and direct percussion are used as much as they deserve. They have long been practised in the editor's clinic, but seem to be unfamiliar to many medical acquaintances.—G. D.]

Experimental Inorganic Heart-murmurs.—Talma (*Berliner klin. Wochenschrift*, 1898, No. 47) reports some interesting experiments made under his direction and published in full (in Dutch) by his pupil Van Dorsten. The experiments were made on dogs, by noting the points where murmurs were heard, putting needles into the body, and then opening the latter. Canulæ were introduced into a femoral artery for withdrawing blood, and into a femoral vein for injecting fluid at body temperature. These experiments

showed: 1. That oligæmia is rarely the cause of inorganic murmurs. 2. That hydræmia, especially hydræmic plethora, favors the production of murmurs, especially in the arterial cone of the right ventricle, but also in other parts of the latter, as also in the left ventricle and the arteries. 3. That quinine causes dilatation of the heart, with cardiac and arterial murmurs, like those of chlorosis. 4. That lowering of the frequency of systole—*i. e.*, distention of the ventricles—favors the development of systolic murmurs. 5. That increasing the force of systole increases or produces murmurs.

PEDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,
OF PHILADELPHIA,

AND

THOMPSON S. WESTCOTT, M.D.,
OF PHILADELPHIA.

Lumbar Puncture in the Child.—PFAUNDLER (70*te Versammlung deutscher Naturforscher u. Aerzte*, Dusseldorf, September, 1898; *Revue Mensuelle des Maladies de l'Enfance*, January, 1899) reports the results of 200 lumbar punctures made in the clinic of Escherich. In tuberculous meningitis he has succeeded in obtaining the bacillus during life in the unusually high proportion of 90 per cent. of his cases. In epidemic cerebro-spinal meningitis the organisms found were the diplococcus of Weichselbaum and the meningococcus of Heubner.

From a therapeutic view-point, lumbar puncture, he believes, gives relief in all cases in which intracerebral pressure menaces life. As a symptomatic treatment it is successful in the cephalalgia, hyperæsthesia, delirium, coma, and convulsions. As a directly causal treatment it succeeds sometimes in hydrocephalus. He also confirms its freedom from danger as an operation, which agrees with the testimony of most observers of the widest experience.

[In this connection, however, it is well not to forget the case reported by ROTCH and WENTWORTH (*Boston Medical and Surgical Journal*, December 12, 1895), in which immediately after the operation the child became restless, the pulse rose to 250 a minute, respiration was superficial, and the skin cool and slightly livid. The child subsequently recovered, and no information was obtained from analysis of the spinal fluid.]

Congenital Stenosis of the Pylorus.—PFAUNDLER (*Wiener klinische Wochenschrift*, 1898, No. 45, S. 1025) states that in the course of his researches upon the capacity of the stomach he has found in fresh cadavers of infants with healthy stomachs that the pylorus was sometimes in a state of persistent con-

tracture, forming a veritable tumor, and being with difficulty permeable by a medium-sized sound. The last segment of the wall would often project several millimetres into the duodenum. By washing with water, or after waiting several hours, this muscular contracture finally disappeared, and then it was seen that the pyloric opening was of normal size.

Microscopical examination in these cases showed a normal structure except a slightly increased size of the muscular fibres—that is to say, an ensemble of lesions usually described as congenital hypertrophy of the pylorus.

The author, therefore, concludes that the stenoses which he has observed and those described under the name of congenital hypertrophy of the pylorus by other writers are simply the result of a reflex contracture of the pylorus occurring in the first weeks of life, and sufficiently explained by an exaggeration of the excitability of the gastric mucosa, which is almost the rule with the nursling.

In this condition, it is almost needless to say, the author is opposed to operative interference, which is contraindicated by both the nature of the affection and the tender age of the infant.

To relieve the spasm he recommends hot and moist applications, narcotics, tub-baths, and especially systematic lavage of the stomach, which, in the normal infant, may even produce temporary incontinence of the pylorus.

A critical review of the subject of congenital stenosis of the pylorus has just appeared from the pen of ROMME (*Revue Mensuelle des Maladies de l' Enfance*, March, 1899, p. 114), who strongly supports the contention of Pfaundler as given above.

The Contagiousness of Gastro-enteritis in Hospitals.—In making a comparison of the statistics of Heubner's service for two successive years, namely, from November, 1895, to November, 1896, and from November, 1896, to November, 1897, H. FINKELSTEIN (*Zeitschrift f. Hygiene und Infectionskrankheiten*, 1898, Band xxviii. S. 124) found a diminution of mortality of 22 per cent. in the second yearly period (from 74.75 per cent. for 1895–1896 to 55.55 per cent. for 1896–1897). During this second term the service for nurslings had been transferred to a new building, where, instead of having one badly ventilated ward, it had two well-constructed wards, and the number of nurses and attendants was doubled. The treatment remained the same.

While recognizing the influence of improved hygiene and the opportunity for greater care in avoiding crowding and securing a certain degree of isolation, the author notes that, at certain periods, infants in way of cure would be suddenly affected with gastro-enteritis, which presented variously the characters of dyspepsia, of acute enteritis, or even of cholera infantum. These gastro-enterites affected a great number of the babies, proving fatal in a certain number, or gradually subsiding after a long and tedious course. These epidemics always coincided with the admission into the hospital of a child affected with this particular form of gastro-enteritis. When once the epidemic was controlled the sanitary state of the wards improved, and the admission of children affected with other forms of gastro-enteritis produced no disturbance among the older patients.

Clinically, this contagious gastro-enteritis was characterized by a sudden onset and by a diarrhœa, with mucus or muco-aqueous stools; in grave cases

the stools were sanguinolent or purulent; weight was rapidly lost. The tonic element was manifested by the fever and more or less marked collapse. The autopsy of such cases showed tumefaction of the lymphoid elements of the intestine, with tendency to ulceration. Most especially infectious and contagious were those in which the general symptoms were slight, but the local phenomena (bloody or purulent stools) very marked.

The researches into the causes of this form of infectious enteritis have not yet been completed, but the author is disposed to attribute it to streptococci.

Thyroid Extract in Myxœdematous Idiocy.—SKLAREK (*Revue Mensuelle des Maladies de l'Enfance*, February, 1899, p. 75) exhibited before the Medical Society of Berlin, at a recent meeting, a girl, aged fifteen years, the subject of a congenital myxœdematous idiocy. At the time of admission to the asylum her height was only thirty-two inches and her weight 15 kilogrammes (thirty-three pounds). Under the influence of thyroid treatment for one year the stature increased five and one-half inches, the hair became thick and natural in appearance, the old teeth were shed and replaced by the permanent teeth, the temperature became normal, and the intelligence improved.

Lesions of the Intestine in Heredo-Syphilitics.—LOCHTE (*Société Médicale de Hambourg*, October 25, 1898) describes very interesting intestinal lesions found in the bodies of two new-born infants, each dying on the sixth day, the subjects of hereditary syphilis.

In one child there were two gummata in the lung, and one in the head of the pancreas. In the jejunum there was a circular ulceration 3 to 4 mm. in diameter, covered by a dysenteric slough. Similar ulcerations were found in the ileum; Peyer's plaques were normal.

Histological examination showed small round-celled infiltration of the mucosa about these ulcerations, disappearances of Lieberkühn's glands, and thickening of the muscular coat. At the point of ulceration the mucosa was completely destroyed, the submucosa showing cellular infiltration with formation of granulation tissue, with endarteritis and periarteritis. The thickened muscular coat was the seat of confluent hemorrhages.

In the second case the intestine presented even to the naked eye a multitude of yellowish foci of fatty degeneration involving the muscular fibres. Besides these foci there was a considerable number of miliary granulations formed by polynuclear cells and connective-tissue elements, which the author considered to be miliary gummata.

The Symptomatology of Friedreich's Ataxia Following Infectious Diseases.—KATZ (*Deutsche medicinische Wochenschrift*, 1898, No. 37, S. 587) reports the case of a girl, aged eight years, who, in the course of a grave attack of scarlatina, presented symptoms of cerebro-spinal meningitis, and, during convalescence, paralysis of the four extremities, with loss of speech. All these symptoms gradually ameliorated, and when the child was first seen by the author, two years later, she showed most of the symptoms of Friedreich's disease: ataxia and characteristic gait, disturbance of speech, nystagmus, absence of knee-jerks, absence of disturbances of sensation, absence of

pain and of paræsthesiæ, and integrity of the sphincters. What was wanting to complete the picture of Friedreich's disease was:

1. Hereditary nervous antecedents; 2. Family type of the disease; 3. Progressive aggravation of the affection, which had shown not the slightest modification of the symptoms in the two years the case had been under observation.

On the other hand, tabes, multiple sclerosis and chorea could be easily excluded, so that the diagnosis of Friedreich's disease seems well established.

Another case, likewise without hereditary antecedents and showing its earliest symptoms two months after an attack of whooping-cough, is reported by VARIOT (*Journal de Chirurgie et de Thérapeutique Infantiles*, 1898, No. 24, p. 463). The patient was a boy, aged eight and one-half years. The symptoms consisted of ataxia of the lower limbs, with abolition of knee-jerks and absence of lightning pains, and the existence of less marked disturbance in the arms; the speech was drawling and articulation imperfect; the Argyll-Robertson sign absent.

Compression of Trachea by Enlarged Thymus.—LANGE (*Société Médicale de Leipzig*, December 13, 1898; *Revue Mensuelle des Maladies de l'Enfance*, March, 1899) reported a case under this title, observed in a nursling of four months, who, for fifteen days preceding death, had continual attacks of laryngo-spasm, which could not be controlled either by bromides or by phosphorus. These attacks, which lasted three to four minutes, were characterized by slowing of the respiration, cyanosis, clonic contractures of the limbs, with the thumbs flexed and turned inward beneath the other fingers. The child died during one of these paroxysms, and the autopsy revealed a large thymus, which measured 8 cm. in length, 5½ cm. in breadth, and 5 cm. in thickness, and was adherent to the pericardium. The heart, and especially the left ventricle, were hypertrophied. The trachea was distinctly flattened from compression by the enlarged thymus.

The Etiology of Acute Anterior Poliomyelitis.—F. SCHULTZE (*Münchener medicinische Wochenschrift*, 1898, No. 38, S. 1197) publishes a most instructive case, which apparently sheds light upon the etiology of at least some cases of acute anterior poliomyelitis. The patient was a boy, aged five years, who became suddenly prostrated and feverish, and twenty-four hours later presented a paralysis of the two arms. Two days later he was brought to the hospital, and the fever, which was then declining, disappeared on the following day. The paralysis of the arms persisted, and it was then noticed that the muscles of the neck were paralyzed. The plantar reflex was exaggerated on both sides, the abdominal reflex normal. Pressure over the spinous processes was painful, especially in the cervical region.

Several days later the condition remained the same, but slight contracture was manifest in the lower limbs. Lumbar puncture was made, and under considerable pressure yielded 30 c.c. of clear cerebro-spinal fluid containing a few flakes and showing the presence of the meningococcus intracellularis.

The symptoms of spinal irritation gradually disappeared, and several months later the child left the hospital with an atrophic paralysis of both arms. He was seen several times in the following year and no change in the palsy noted.

The case was therefore one of infantile palsy complicated by meningitis, the latter condition being manifested by the contracture of the lower limbs, by the tenderness over the cervical verterbæ, and by the increased pressure of the cerebro-spinal fluid. This meningitis was not diffuse, since such principal symptoms as cephalagia, contracture of the nuchal muscles, and general hyperalgia were wanting. It was evidently localized to the cervical segment of the cord.

The author asks whether the meningococcus found in the spinal fluid was not at the same time the excitant of the poliomyelitis. He believes this a reasonable theory, since it goes far to explain the analogies which exist between epidemic cerebro-spinal meningitis and poliomyelitis, such as the rapid evolution of their clinical symptoms, their frequency in childhood, and the epidemic character of these two affections.

The Anæmias of Infancy.—MARFAN (*Archives de Médecine des Enfants*, 1898, No. 12, p. 712) states that from a clinical point of view the anæmias of young children do not in general produce, as in the adult, cardiac or vascular bruits; inorganic murmurs are absolutely exceptional before the age of three years. In one case, however, which he reports, such murmurs were heard with great intensity in a child of twenty-six months. The anæmia of nurslings is distinguished by two features:

1. It is accompanied very frequently by hypertrophy of the hæmatopoietic organs—spleen, liver, and lymphatic ganglia. These alterations depend probably upon the infectious state which causes the anæmia rather than upon the anæmia itself.

2. It is accompanied most often by a modification of the blood, which is rare in the adult—that is, the habitual appearance in the blood of nucleated red cells, which are encountered in the adult only in the course of grave anæmias with fatal termination. The younger the child the more frequent is the appearance of these nucleated forms.

Etiologically the author emphasizes the statement that the anæmias of nurslings are never primary. Together with the hypertrophy of the blood-making organs, they are one of the symptoms of the cachectic state which is ordinarily produced by subacute or chronic infections. These may be observed in the course of or following gastro-enteritis, and especially with rhachitis, subacute broncho-pneumonia, prolonged pyodermites, adenoid vegetations upon suppurating surfaces, tuberculosis, and syphilis.

As to anæmia infantum pseudo-leukæmica, which is generally considered an autonomous, independent, primary disease, the author, basing his opinion upon two cases very exhaustively studied, believes that he is justified in concluding this condition can succeed a chronic gastro-enteritis complicated by rhachitis.

[This opinion seems to be largely in accord with that expressed by Morse in a recent paper, an abstract of which was published in this department in the preceding number of the JOURNAL, April, 1899, p. 464.—ED.]

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY HOSPITAL;

ASSISTED BY

ALFRED C. WOOD, M.D., INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY OF PENNSYLVANIA; ASSISTANT SURGEON, UNIVERSITY HOSPITAL.

AND

C. L. LEONARD, M.D., ASSISTANT INSTRUCTOR IN CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

The Treatment of General Peritonitis and the Other Complications of Appendicitis.—BROCA (*Gaz. des Hôpiteaux*, January 17, 1899) expressed his opinion on this subject before the Société de Chirurgie in Paris, as follows:

The diagnosis of general peritonitis is an indication for operation, which should be as speedy as possible. Although the patient operated upon under these circumstances generally dies, Broca has had recovery follow in four of thirty-one cases of this character which he has operated on.

The plan adopted by some surgeons of immediate operation in all cases, he says, was the course he pursued in his earlier operating, but his experience taught him that if the patient was not threatened by the severity of the immediate symptoms, and if peritonitis was not imminent, or a localized collection of pus could not be recognized, medical treatment was the best, while the patient was carefully watched so that as soon as local or general symptoms indicated it operative interference could be immediately instituted.

This course of treatment, however, presupposes the careful watchfulness of a skilful observer, capable of noting any change in the symptoms; for operation must not be delayed after it is indicated by the symptoms, or the patient's chances of recovery are greatly lessened. The result of this medical treatment and waiting is a lowering of the temperature and a decrease in the amount of inflammatory thickening.

The symptoms of appendicitis are now so well known that, although the formation of abscesses in unusual localities is difficult to detect, their presence should be easily recognized. In reference to the removal of the appendix from the abscess at any cost, the author believes this is poor surgery. The adhesions are the patient's safeguard; to break them down places the patient in greater danger. The opening and evacuation of the abscess saves the patient's life, but these adhesions save it till the abscess is opened. Nature does not take care of the appendix in all cases, and he does not believe it should be left to her; it should be removed at a subsequent operation which will have the added advantage of forming a firmer scar in the abdominal wall than that produced by the healing where suppuration was present. These operations are necessary and benign, but he does not advise them in all cases, nor does he believe that operation is indicated whenever there has been an attack of appendicitis. If no tenderness or swelling is present he would wait for further indications before operating.

Plastic Closure of Osseous Defects After Operation on the Mastoid Process.—V. MOSETIG-MOORHOF (*Cent. f. Chir.*, 1898, No. 46) describes the following method of closing the defects that follow operation on the mastoid: A flap is cut, having its broad pedicle on the lower margin of the defect and extending down into the area of skin that is free from hair follicles. If any hairs are present in the area they should be removed by epilation before the operation. The margin of the defect is freshened, except where the pedicle of the flap is attached by a double incision removing a long narrow strip. The edge is then raised by passing the knife beneath it parallel with the surface of the skin. The flap is now turned once and its margin slipped beneath the edge that has been raised. This is facilitated by blunt hooks, which lift the pedicle and facilitate the invasion. The flap is held in place by sutures, while the wound resulting from its removal is closed by interrupted sutures. The raw surface of the flap may be covered by the transplantation of skin or by scar-tissue processes.

The six cases which this author has operated upon have all given satisfactory results. The closure of the wound is immediately secured, and no air can pass through.

A New Radical Operation for Inguinal Hernia without Buried Sutures.—JONNESCU (*Cent. f. Chir.*, 1899, No. 3) describes a method which he has devised for obviating the employment of buried sutures in radical operations for hernia in the inguinal canal.

The operation described differs from others where sutures have been employed only in the method of placing the sutures and the disposition of the stump of the sac, which is brought into the wound and forms a part of the scar that unites the muscular plane that overlies the canal.

The sutures are double silver sutures put in layers. They are U-shaped, the two ends being brought out through the skin on the lower side of the wound and fastened over rolls of sterile gauze. The doubled portion being on the opposite side of the wound in the lower layer in the internal oblique muscle, and in the upper in the aponeurosis of the external oblique, or on the skin where they are looped over other rolls of sterile gauze. In one instance superficial skin sutures are employed, in the other they are not essential. The stitches are removed on the fourteenth or fifteenth day.

The author has been successful in the seventeen cases in which he has employed this method, and believes that the doing away with buried sutures is a distinct advance in the technique of radical operations.

Radical Operations for Herniæ.—BRENNER (*Cent. f. Chir.*, 1898, No. 41) in speaking of Bassini's operation, which he considers almost perfect as an operative procedure for radical cure of hernia, suggests a slight modification which he has found useful and to which he ascribes the very good results obtained.

The operation is performed according to the method laid down by Bassini, except that care is taken in opening up the canal to separate the cremaster muscular fibres from those of the internal oblique, and both from the aponeurosis of the external oblique.

After a careful separation and ligation of the sac the cord is displaced in

the usual manner and the muscular fibres united beneath it with interrupted sutures. The union resulting from this slight modification between muscular and muscular tissues is much firmer than where the internal oblique and cremaster are united to the fibres of Poupart's ligament.

The divided fibres of the aponeurosis of the external oblique are then united over the cord and finally the skin. The author adheres to the practice of leaving a drainage-tube in for twenty-four hours. He finds that the oozing that occurs after the operation is carried off by this means and that the resultant healing is better.

He has operated upon 348 herniæ in 251 individuals. The length of time required for healing varied from ten to thirty days. The majority of the patients were dismissed without a truss fourteen days after operation.

He was able to examine after one year and more, 169 herniæ. Ten cases showed relapse—that is, 5.9 per cent.

In young adults where there is hernia present and a predisposition to hernia, the opposite inguinal region should be opened and examined for incipient hernia. The operation completed as a Bassini strengthens the region and prevents hernia. The author has never seen any harm from the operation. In 157 cases he found hernial sacs present on the opposite side in 81 cases. In 27 cases they were very small. In 66 cases there was no sac, but he found in three lipoma of the cord, in one the testicle, in one the obliterated sac, in one funicular hydrocele, and incipient direct hernia in seven cases.

In thirteen women operated upon he found the hernial sac present on both sides nine times.

The Radical Cure of Reducible Hernia by Kocher's Method of Invagination with Lateral Displacement of the Neck of the Sac.—THOMAS (*Bristol Medico-Chirurgical Journal*, December, 1898) describes as follows Kocher's latest modification of his hernia operation, which Thomas has employed with success, since witnessing Kocher's operation, in five cases.

The modification consists in grasping the hernial sac with a pair of long curved forceps; the sac is invaginated into the general peritoneal cavity and carried along the anterior abdominal wall until it is nearly opposite the anterior superior iliac spine on the side operated upon. The point of the forceps is now pushed against the abdominal wall, and a small incision is made through the abdominal muscles down upon it, then the forceps carrying the hernial sac is pushed outward, the sac is caught and pulled out through the wound after liberating the forceps. The sac is then fastened, cut off, the wound closed, and the operation completed in the usual manner. The advantage of the modification is that there is no puckering ligature or depression left at the internal ring to invite a further hernia. In one of the author's cases the patient, sixteen days after an operation for double hernia, walked a quarter of a mile with no external support.

The author does not believe in personal modifications of methods when a method that gives perfect results is known, nor does he believe in keeping patients in bed after healing has taken place. These scars never give way if linear until months after operation, and not then if the operation was aseptic.

On Re-establishing Surgically the Interrupted Portal Circulation in Cirrhosis of the Liver.—WEIR (*Medical Record*, February 4, 1899) reviews the experimental and clinical work which has been done in this direction, and details a case of his own in which the attempt was made to unite the peritoneal covering of the liver to the diaphragmatic peritoneum and that of the anterior parietes.

The peritoneal surfaces were scratched with the sharp point of a hat-pin, and after the oozing had ceased the omentum was stitched to the edges of the abdominal wound and the wound closed. Siphon drainage was secured by passing a double perforated tube into the pouch between the bladder and attaching a Cathcart apparatus. Compression of the abdomen was produced by overlapping straps of adhesive plaster.

The patient did well for a time, but died from a peritonitis which apparently entered through the drainage-tube, although every precaution had been taken to keep it aseptic. The peritonitis was apparently localized about the tube, and was most intense in that region. The autopsy showed that firm adhesions had taken place where the peritoneum had been irritated. Scolices of echinococci were found encysted on the liver; their presence so deep in the peritoneum may have predisposed to peritonitis. Many micrococci in chains were also found in the adhesions.

Of the seven cases that have been operated upon, two recovered; two recovered from the operative interference, but were not benefited by the operation, and three died. Of these latter, one died from shock, and two from infection through the drainage wound.

The author would hereafter prefer to resort to paracentesis if it became necessary, rather than employ permanent drainage, as the risk seems less. Furthermore, of necessity, in the early stages of any surgical measure such as this, one must and should operate only on those patients who are regarded as hopeless of cure by other measures. Finally, the intent of the operation is to afford relief to the obstructed portal circulation by an artificial anastomosis that will aid nature's efforts in the way of collateral venous circulation.

Traumatic Epiphyseal Separation of the Head of the Femur, with its Relation to Coxa Vara.—SPRENGEL (*Arch. f. klin. Chir.*, Band lxvii. Heft 4) reports two cases of epiphyseal separation of the head of the femur that closely simulated coxa vara. In both cases the epiphysis was displaced downward and had united in a false position that restricted function and produced symptoms so analogous to coxa vara that the true condition was not diagnosed until after the operation. This consisted in a resection of the head of the femur, leaving the great trochanter and part of the neck. The motion in the limb was increased, but neither patient could stand on the affected limb, and they were compelled to use crutches.

The author enters into a long discussion of the literature and finds that recent investigation has shown that the traumatic separation of the epiphysis is much more frequent in the head of the femur than was formerly supposed. Twenty-three cases have been reported, including the two noted in his paper. They should lead in all cases of traumatic injury in youths to the investigation of the condition found present in the epiphysis, and this condition should never be lost sight of.

This author believes that resection and removal of the head of the bone is preferable to any other method of treatment, as by osteotomy either of the neck of the femur or through the trochanter.

Surgical Intervention in Traumatisms of the Heart and Pericardium.—CESTAU (*Gaz. Heb. de Méd. et de Chir.*, 1898, No. 17) makes a careful and critical review of the clinical and experimental work that has been done in connection with this subject. He finds that the pericardium and heart are not regions where surgical intervention is always contraindicated. Surgical intervention with relief from conditions that threatened life has been followed in a number of instances by recovery. Foreign bodies that have entered the pericardium and wounded the heart itself have been removed, the pericardium has been emptied of clots, while suppurative pericarditis has been cured by pericardotomy and drainage.

Before intervention is attempted the condition of shock that is generally present must be overcome. This is accomplished by the intravenous injection of physiological serum and other fluids. The old method of venesection has been abandoned, and it has been found that there is no greater danger by the new method of producing fresh hemorrhage. Intervention should not take place while the heart is weak, and nothing should be done to enfeeble it. Anæsthetics should be avoided or used only in a very slight amount, without full anæsthesia.

The method of intervention is influenced by the form of injury that requires it. If the injury is of the nature of a puncture or prick as by a needle, the foreign body should be removed. If the volume of the foreign body is greater it is better to operate where everything is in sight rather than to trust to the closure of the wound by a contraction as the body is gradually withdrawn. The pericardium and, if necessary, the heart is laid bare, sutures are placed in position, the foreign body removed, and the wound closed immediately by drawing the sutures.

Where an incised wound of the heart is suspected the symptoms must be the guide. Secondary intervention has succeeded in a number of cases, and intervention must be postponed till the symptoms indicate the necessity. The complications to be watched for are hemorrhage and pericarditis. In suppurative pericarditis the universal opinion is that it should be treated as all other forms of abscess in serous cavities.

In hemorrhage the question is still *sub judice*. Immediate intervention is never indicated as spontaneous arrest often cures. Therefore, if the area of pericardial dulness remains stationary and does not increase, expectant treatment is indicated. When, however, there is an aggravation of the general condition, with pallor, weak pulse, syncope, an augmentation of precordial dulness, weakening of the sounds of the heart, and recurrent external hemorrhage, intervention is indicated. When possible the track of the wound should be examined before opening the pericardium.

Further Observations on Coxa Vara.—WHITMAN (*New York Medical Journal*, January 21, 1899) reports an additional series of twenty-two cases of this disease. He believes that it is much more common than is supposed and that many cases are treated as cases of tubercular disease. Coxa vara

is a depression of the neck of the femur, in most instances following the line of least resistance, downward and backward, or even downward and forward, and occasionally directly downward. It is one of the group of deformities of the lower extremity due to inherent or acquired weakness of structure or to disproportionate strain, or both, in which knock-knee, bow-leg, and weak foot may be included.

Coxa vara is to be detected only by physical examination. The points developed are: the trochanter is elevated, prominent, and displaced, as may be demonstrated by Nélaton's line and Byrant's triangle, the actual shortening of the leg and the peculiar and unequal limitation of the range of motion dependent upon the deformity. In progressive cases forced passive motion causes discomfort, and at times it may be resisted by voluntary and involuntary contraction of the muscles. This is, however, unusual. There is commonly a certain amount of muscular atrophy, more marked in the thigh than in the leg, which corresponds to the duration and to the degree of the disability.

The condition is probably the result of an inherited or acquired weakness, either of position or structure; it may be the important predisposing cause of the deformity. The exciting cause would be the instability of rapid growth, overstrain, overweight, and injury. Improper surroundings, insufficient nourishment, or debility from any cause, undoubtedly lessen the resistance of the bones as of other parts, but the presence of actual local disease is by no means necessary to explain the deformity.

The preventive treatment, if a diagnosis has been made in the early stages, may succeed, by the use of the perineal crutch and removing the strain of over-exertion, in checking its progress. This should be accompanied by massage, passive motion, and a limited amount of exercise, with passive forcible manipulation of the leg in the direction of limited motion.

The operative treatment consists in correcting the deformity by removing a cuneiform section from the base of the trochanter. The author has had success in the three cases treated in this manner. This operation is seemingly indicated in cases occurring in early childhood. Linear osteotomy below the great trochanter is sometimes valuable in enabling one to correct marked deformity.

In addition to thirty cases of coxa vara the author has seen fourteen cases of fracture of the neck of the femur in children. The majority of these cases were diagnosed as hip disease when sent for treatment. Before these cases can be properly classified an anatomical basis must be found by eliminating non-tubercular affections.

Bloodlessness as a Local Anæsthetic.—KOFFMANN (*Cent. für. Chir.*, 1898, No. 40) calls attention to the fact that bloodlessness as produced by the elastic tourniquet makes the area below the band anæsthetic if a sufficient time is allowed to elapse before the operation is undertaken and if the area immediately below the bandage is not invaded. The bandage must in all cases be very tightly applied.

BRAUN (*Ibid.*, 1898, No. 43), in commenting upon this article, shows that it is only a revival of an old method which has long ago been rightly discarded. The anæsthesia is not produced by the mechanical obstruction of

the circulation and the bloodlessness of the region, but by the compression which the tightness of the band produces upon the main nerve-trunk. This is shown by the facts that it is produced by only the tightening of the band altogether, more than is required to effect the circulation, and also that the region immediately below the band is not anæsthetized, although the blood-supply is cut off.

This method is not only very painful in its after-effects upon the patient, but the compression is liable to result in an injury to the nerve-trunk that is permanent, and may be followed by a necrosis at the point of pressure or a permanent injury to the nerve.

Infiltration Anæsthesia.—HEINZE (*Arch. für path. Anat. und Phys.*, 1898, Band cliii. Heft 3) has conducted a series of experiments that are of great value in determining the local anæsthetic power of various agents that are now in vogue for this form of anæsthesia.

The tests were not made upon animals or upon various individuals seen in the course of clinical work, but upon his own person.

The action of varying anæsthetic solutions he found to be due entirely to the amount of cocaine they contained, and not to peculiar properties that have from time to time been attributed to the combined action of their other constituents.

His experiments further demonstrated that the action of eucaine-B and cocaine were equal. One reason of this is that, as shown by Braun's researches, their osmotic tensions are about the same. The anæsthesia which they produce in 0.1 per cent. and still weaker solutions lasts about fifteen minutes. The irritant action of eucaine-B is less even than that of cocaine; 5 and 6 per cent. solutions were not as painful when injected as cocaine solutions of the same strengths.

The eucaine-B solution was found to be less toxic than cocaine, and has the advantage of being capable of sterilization. He recommends its employment in place of cocaine, and that it should be generally employed in infiltration anæsthesia in weak solution, as in the following formula:

Eucaine-B	gr. iss;
Sodium chloride	gr. xij;
Distilled water	f ℥iij; ℥ij.

Such a solution is capable of being sterilized at any time without interfering with its efficiency. It causes no swelling, and therefore does not injure the tissues or interfere with primary union. The eucaine-B is the only anæsthetic in the solution, the salt simply preventing irritation.

BRAUN (*Archiv für klin. Chir.*, September, 1898) deals in a critical manner with the different methods that have been employed for local anæsthesia—the mechanical form, that partly mechanical and partly due to drugs, and, lastly, that due entirely to the action of certain drugs on the terminal filaments of the nerves. This author agrees with Heinze that eucaine-B and cocaine are the only drugs that really produce local anæsthesia without harmful after-effects; they paralyze without irritation or injury to the tissues, and produce an anæsthesia, in dilute solutions, that is sufficiently

lasting for operative purposes. He recommends its employment in the same solution as given above, and for the same reasons prefers it to cocaine.

His researches and those of others have shown that while eucaine-B, when employed in 5 or 10 per cent. solutions, cannot fail occasionally to produce symptoms of poisoning, it is an ideal and perfectly harmless drug when properly employed for infiltration anæsthesia. When employed in the solution described above and sterilized it has never interfered with the normal course of healing in the wounds in which it was employed.

He notes the fact that this local anæsthetic, like cocaine, cannot be employed where heat, as the actual cautery, is to be employed, as the heat destroys the anæsthetic properties of the drug. The osmotically indifferent warmed solution of eucaine-B is very serviceable in opening acute or chronic abscesses, and does not give rise to the pain so often noted with Schleich's solutions. He found the 1 per cent. eucaine-B solution far preferable to local infiltration anæsthesia where it is desired to effect the conductivity of the nerve-trunk and produce regional anæsthesia, as in the fingers and toes. The action in these cases he considers all that could be desired. Six per cent. of salt should be added to all solutions.

Undoubtedly there are cases in which the stronger solutions are preferable to infiltration of the tissues by the more diluted ones, but in general weak solutions should be employed where equally good results can be attained.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.D., LL.D.,

PROFESSOR OF MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

The Use and Abuse of Atropine in Ocular Therapeutics.—Dr. A. D. McConachie regards its greatest indication to be in iritis, whether rheumatic, traumatic, syphilitic, or idiopathic. In adults one drop of a 1 per cent. solution usually suffices to dilate the pupil fully if instilled every two or three hours. In children of one to five years, one-fourth of 1 per cent. solution should be used. Intolerance of the drug is shown by: (1) Toxic symptoms, as dry throat, nausea; (2) the production of catarrh—this usually follows long-continued use; (3) redness and swelling of the lids. It is indicated in all traumatisms of the eye when iritic or cyclitic involvement is suspected, in corneal inflammations, ulcer of the cornea, and to dilate the pupil for ophthalmoscopic examination. Among the abuses cited are its uselessness or even positively injurious effects in simple uncomplicated conjunctivitis, not only because it possibly may increase the conjunctival inflammation, but because of the unnecessary inconvenience of disturbed vision. It should never be used simply to dilate the pupil temporarily in patients beyond forty-five years of age, the glaucomatous tendency being more marked

at this time, and its instillation can readily so occlude Fontana's spaces as to precipitate an attack of acute glaucoma. Under no circumstances should it be used in glaucoma.—*Maryland Medical Journal*, 1899, No. 13, p. 195.

Cure of Diabetic Coma by Large Injections of Artificial Serum.—Drs. Roget and Balway mention several solutions in use for intravenous or subcutaneous injection varying slightly in composition. They prefer: Sodium chloride, 7; distilled water, 1000, and think that the composition of the liquid is of less importance than generally supposed. The object to be attained is the elimination of the poisons, and this requires healthy kidneys.

The remaining organs of elimination, the kidneys being diseased, will not suffice. The injection of salt solution with or without the addition of alkaline salts, probably acts in several ways, and thus is explained improvement in diabetic coma, with complicating renal disease. It furnishes fluid to the dehydrated tissues. Owing to the great polyuria, constant exoserosis of fluid results in a dessication of the tissues; the blood becomes thick. Saline injections prevent these changes, and rendering the blood less viscous will remove the poisonous elements. Glandular activity is increased by the additional supply of fluid. The salivary and sudoriferous glands increase markedly their excretion. The intestinal mucous membrane permits transudation of so much fluid that, clinically, a diarrhœa results. Thus, much of the poisonous material can be eliminated. The harmful action of the remaining toxic matter is retarded by the saline injection. The nervous system is also affected. Constantly bathed in a poisoned fluid the nerve centres are as though anæsthetized. To this is due the clinical picture of diabetic coma. Following the injections the patient recovers consciousness. Experiments are quoted to show that sodium chloride actively affects muscular respiration. Following intravenous saline injection the absorption of oxygen and elimination of carbon dioxide is more active in the muscles. Perhaps the saline solution also exerts a beneficial influence, causing hyperleucocytosis, and affecting the blood-making organs; it may be serviceable in other unknown ways. Nevertheless, the poisoning can only be retarded, for the toxic element increases with great rapidity, and, there being an insufficient renal elimination, soon poisons the patient. Study of a series of cases shows that in two patients who were permanently cured of coma clinically, the kidneys were healthy, and in one of these dying four months later the post-mortem microscopical examination showed the renal tissues to be sound. In six patients who were temporarily benefited, recovering consciousness for a time, all showed grave kidney lesions at autopsy. Following the saline injection it has been proved that the acidity of the urine is increased at least one-third, and thus the toxic matter is eliminated. The cure of diabetic coma can be hoped for only in patients with healthy kidneys. Where renal disease is present, temporary amelioration is very likely to follow the saline injections. One or two quarts are to be introduced daily. Too little fluid does not sufficiently dilute the circulating poisons; too much causes effusion into the serous cavities and dilatation of the heart. Early operation is very essential to success. The longer the coma has existed, the more profound is the poisoning. Subcutaneous injection will suffice when the coma threatens to appear. If coma be present intravenous injection is indicated.—*Lyon Médicale*, 1899, Tome xc. p. 158.

The Treatment of Gout.—Dr. A. De Thierry Mouillot argues from the success of colchicum that the objects aimed at should be to diminish the quantity of uric acid formed and stimulate the intestinal glands and liver, while endeavoring to remove all the uric acid formed through the excretory organs. Colchicum probably acts by its effect on the liver and intestinal glands, which increases the quantity of bile, thus removing, in the form of glycocholic acid, one of the antecedents of uric acid. Chronic gout and goutiness must be treated mainly by diet and periodic visits to watering-places. The main points in diet are to drink liquids freely apart from meals, and to make the meals as little complex as possible. Stimulants should never be taken except at meals, on account of their effect on the liver. The waters of Harrogate reduce the amount of uric acid eliminated while increasing that of urea. The reason evidently is that the sulphur-saline waters remove by the bowels some of the antecedents of uric acid, while their stimulating effect on tissue change increases the principal product of metabolic activity—urea.—*The Medical Press and Circular*, 1899, No. 3125, p. 321.

A New Base for the Application of Drugs to the Skin.—Dott. Pietro Ballico writes concerning filmogen, which is a solution of cellulose nitrate in acetone, to which is added castor oil to give it elasticity. On evaporation of the acetone an adherent, impermeable, and transparent film is formed. This completely excludes atmospheric air, prevents the development of secondary pathological products, limits the secretions and controls the strength of the remedy. Its suggested uses are; 1. As an antiparasitic, with chrysarobin, pyrogallic acid, resorcin, ichthyol, and salicylic acid. 2. To close small wounds either alone or with iodoform. 3. To limit ulcerative infectious processes either alone or with corrosive sublimate or iodoform. 4. In secondary syphilis, palmar or plantar psoriasis, and papular or gummous forms, with corrosive sublimate. 5. For warts and condylomata as a 5 per cent. solution of corrosive sublimate. 6. To absorb or soften infiltrations and collosities, with soda, potassium iodide, resorcin, or salicylic acid. 7. To relieve prurigo, with resorcin, ichthyol, and menthol. 8. As an antiphlogistic in acne, eczema, and intertrigo, either pure or with ichthyol or salicylic acid. Ordinarily 10 per cent. (corrosive sublimate 5 per cent. only) solutions are employed.—*Gazzetta degli Ospedali e delle Cliniche*, 1889, No. 1, p. 15.

Local Cocaine Anæsthesia Combined with the General Action of Morphine.—Dr. Ceci writes that more accidents from general anæsthesia occur than are reported, and post-operative complications due to the anæsthetic are frequently overlooked, such as renal and hepatic inflammations following etherization. He believes that many sudden deaths occurring several days after operation, and inexplicable anatomically, even at necropsy, are due to chloroform. In young patients all minor operations should be done without any anæsthetic. The local action of cocaine is always to be preferred to general anæsthesia, except in most grave cases. Care must be taken that the solution is aseptic. Extirpation of goitre, rectal resection, vaginal hysterectomy, cœliotomy, have been successfully performed with cocaine anæsthesia. Strength of solution: Cocaine hydrochlorate, 1; boric acid (saturated aque-

ous solution), 200. Should be freshly prepared; boiling is necessary. To prolong and deepen the local anæsthesia, morphine is injected some minutes before the cocaine, the maximum and minimum doses of morphine being respectively two-fifths and one-tenth of a grain. The smaller amounts are indicated in vigorous young adults, the larger in advanced age. To patients eighteen or twenty years of age morphine is seldom given, and even cocaine itself is infrequently exhibited. The author prefers a single deep injection of cocaine to a number of subcutaneous ones. This latter method—"anæsthesia by infiltration"—is serviceable when the operative field is much extended, as in intra-abdominal cases. The addition of morphine to the local cocaine injection prolongs anæsthesia at least half an hour, and often forty or fifty minutes. Using the above indicated small quantities of cocaine, intoxication has not been observed. Slight dryness of the throat and thirst occasionally occur, rarely excitation and loquacity. Wölfler's "dangerous zone" is not sufficiently demonstrated to be useful. Attention is called to the rapidity with which anæsthesia can be obtained, this being equally true in alcoholic patients. The author does not explain his objection to the use of cocaine in young adults.—*La Semaine Médicale*, 1899, No. 6, p. 41.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC; CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE; VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

Intestinal Occlusion Complicating Pregnancy and Labor.—MEYER (*Monatschrift für Geburtshülfe und Gynäkologie*, 1899, Band ix., Heft 2) reports two interesting cases of occlusion of the intestine in pregnant and parturient women.

His first case was a multipara, who, during her pregnancy, sustained a severe blow upon the abdomen. This was followed by a movement of the bowels, by pain and vomiting, and by the beginning of what she supposed to be a premature labor. The pain was subdued by morphine, and, as the patient could not be delivered, she was kept under observation without active interference. Two days later she was much the same, with occasional abdominal pain, the tongue moist, and the pulse 100. The abdomen was tender, and efforts to move the bowels failed. She grew worse, and was removed to a hospital for operation.

Although hernia could not be diagnosticated, it seemed most likely that strangulated hernia was the condition present. Accordingly it was determined to cut down upon the usual site of hernia in the side where most pain was located, and, should nothing be found there, to open the abdomen.

When this was done hernia was absent, but in the left broad ligament was found a small opening through which the bowel had slipped. The intestine was readily extracted, and was not in a very bad condition. The operator endeavored to stitch together the aperture, but owing to the large size of the pregnant womb this was difficult. He accordingly very gently tore the opening so widely that the accident could not recur.

Shortly after the operation the patient came into labor, and was delivered of a living child. Both made a good recovery.

The second case was a primigravida, who suffered from vomiting, failure to move the bowels, and the usual phenomena of intestinal obstruction. After temporary relief by opium, labor came on, and a child was delivered with forceps. She seemed temporarily better, but rapidly grew worse. On opening the abdomen occlusion of the bowel was discovered due to a congenital malformation. A coil of intestine was attached by an abnormal mesentery in such a way as to form a loop through which the transverse colon near the descending bowel had slipped. It was impossible to reduce the hernia, and the formation of an artificial anus was accomplished. The patient died of shock.

In addition to these cases, Meyer has collected fourteen—a total of sixteen. A few resulted from retroversion of the womb or from torsion in the pedicle of an ovarian cyst. Thirteen, however, were from other causes, and of these ten died. In none of these patients did emptying of the uterus prove of the slightest benefit, thus illustrating the rule that in the complications of pregnancy the complicating factor should be removed as soon as possible without interrupting the pregnancy.

The Function of the Decidual Cell.—FOTHERGILL (*Edinburgh Medical Journal*, March, 1899) contributes interesting observations upon the behavior of the decidual cell. In pregnancy the lining membrane of the womb has large nuclei with clear outline and abundant cell protoplasm. From the study of fleshy moles and placental polypi, Fothergill observed that decidual cells attack the cells of the embryo.

One of his cases was that of a multipara, aged thirty-five years, who had complete amenorrhœa for seven months. A fleshy mole was expelled, and recovery was rapid and complete. On examining the specimen its outer surface consisted of the maternal aspect of the placenta. The cavity of the ovum was intact, but contained nothing, the embryo having been absorbed. The amniotic surface of the placenta was thrown into elevations, separated by deep furrows. The mass was composed of villi, fibrin, decidual cells, and fresh blood compacted into a firm structure. On examining sections with the microscope it could be seen that the decidual cells had attacked the epithelia of the villi, causing them to disappear and reducing the villi to masses of connective tissue. The tendency of embryonal tissues to attack maternal parts has been frequently observed by others. The observations of Fothergill are interesting in view of the possible development of malignancy in these cases.

The Treatment of Puerperal Septicæmia by Antistreptococcic Serum.—In the *Transactions of the Obstetrical Society of London*, 1898, vol. xl., Part 4, WALTERS reports the case of a multipara who became septic after an

incomplete abortion. Although the uterus was curetted, it was not completely emptied, and several days afterward the patient expelled parts of a macerated fœtus. She became intensely septic, the temperature rising to 103°, the tongue being very dry and the patient's pulse rapid. Two injections of serum, 10 c.c. each, resulted in immediate and marked improvement. The patient ultimately recovered.

In discussion, Routh said he had treated five or six cases and had seen a positive result in one. He thought that a positive diagnosis of streptococcus infection should be made before the serum was used. Robinson had treated seven cases of puerperal sepsis with serum; five of these died and two recovered. In one the injection had an immediate effect, and a membranous vaginitis was present, but rapidly disappeared. Phillips had seen one case in which the patient's recovery must be ascribed to the serum. Twenty injections were given in an illness of six weeks. Cullingworth did not believe it to be practicable to wait for a positive diagnosis of the presence of streptococci; he would inject the serum when the patient was septic. The womb had been thoroughly emptied and explored by the finger, and after this the patient did not improve.

Ectopic Gestation.—The *Transactions of the Obstetrical Society of London*, 1098, vol. xl., Part 4, contain the reports of several interesting cases of ectopic gestation. CULLINGWORTH describes the case of a woman admitted to the hospital, said to be suffering from retroversion of the pregnant uterus. Efforts were made to replace the tumor, but without success. It was thought that fœtal parts could be felt through the thin wall of the retroverted womb. The patient left the hospital, but returned again, complaining of severe pain in the lower part of the abdomen, constipation and pain on micturition. There was a dark-colored discharge, not offensive. Under anæsthesia the womb was found empty. There was a solid tumor in the anterior wall of the uterus, while behind the womb in the pelvis was a soft, elastic swelling, which could not be separated from the back of the cervix. The patient was kept under observation for two weeks, with no great change. Upon opening the abdomen an ectopic gestation was found behind a fibroid uterus. Hysterectomy was performed and the entire mass removed. Upon examination it was found that the fœtus had escaped from the tube and had made for itself a sac in Douglas' pouch. The uterus contained in its walls three fibroids.

In discussion Doran called attention to the fact that the fœtus and placenta in tubal pregnancy have been found to lie in separate dilatations of the tube. He thought the fœtal sac in this case lay in such a diverticulum. Cullingworth thought that the intramural portion of the tube was involved in this case.

On page 308 of these *Transactions* Sutton describes a tubo-abdominal pregnancy in which, on operation, the omentum was found stained with meconium. A fœtal hand was observed firmly grasping a coil of omentum. The fœtus was living and was rapidly extracted. The placenta derived its vessels from those in the great omentum. It was possible to ligate the omentum and the vascular connection of the placenta, and thus to control the blood-supply. The outer fifth of the right tube was removed, with a section of mesosalpinx. A narrow rubber drain was inserted, through which much

serous fluid escaped for the first two days after the operation. The patient made a good recovery. The child died with convulsions shortly after birth.

The Origin, Growth, and Fate of the Corpus Luteum.—In the *Archiv für Anatomie und Physiologie, Anatomische Abtheilung*, reprinted in the *Johns Hopkins Hospital Reports*, 1898, vol. vii., No. 4, CLARK published a very interesting research upon this subject. He considers the growing follicle, the ruptured follicle, and corpus luteum in the various stages of their development, and then discusses the function which this body may possess.

During the stage of development increase in number and size of the lutein cells and of the connective-tissue cells and bloodvessels is observed, with the gradual formation of a connective-tissue ring from the fibres of the membrana propria, and also the appearance of fatty degeneration among the lutein cells.

These lutein cells are specialized connective-tissue cells, appearing in the inner layers of the follicle wall, where it begins to separate into internal and external layers. They gradually increase in size and number until they take on all the characteristics of lutein cells. Thus the corpus luteum is essentially a connective-tissue structure. When the follicle ruptures the membrana propria is broken through by lutein cells and bloodvessels, but re-forms a connective-tissue line in front of the lutein cells, which push it toward the centre, where it finally forms a dense core of interlacing fibres. After the rupture of the follicle the connective-tissue or lutein cells rapidly fill the empty cavity, after which they degenerate. This is brought about by the increasing density of the surrounding connective-tissue, and consists in fatty degeneration, followed by shrinking of the connective-tissue and hyaline changes until a very fine scar-tissue is left, which merges into the ovarian stroma. The larger bloodvessels of the corpus luteum are among the last structures to give way.

The function of the corpus luteum is that of a preserver of the ovarian circulation. As the woman grows older and the stroma of the ovary increases in density, the corpus luteum is slowly or imperfectly absorbed until its deposits hasten the cessation of circulation in the ovary.

Ovulation ceases because of the growing density of the ovarian stroma and the destruction of the peripheral circulation, which prevent the development of the follicles.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D.,

OF NEW YORK.

New Operation for Prolapsus Uteri.—WERTHEIM (*Centralblatt für Gynäkologie*, 1899, No. 14) conceived the idea of applying to cases of prolapse the principle of drawing down the uterus into the vagina and utilizing it to close

a vesico-vaginal fistula, as suggested by Freund. A transverse incision is made in the anterior fornix, the vesico-uterine fold of peritoneum is opened, and the fundus uteri is drawn through the opening, each angle of the wound being sutured to the cervix. An oval denudation is then made on the anterior vaginal wall, extending from a point just above the meatus urinarius to one-half an inch below the transverse incision. The posterior surface of the corpus uteri is then denuded, and is united to the edges of the vaginal wound. In the two cases reported the operation required from twenty-five to forty-five minutes, the convalescence was afebrile, and the pre-existing vesical disturbances were at once removed. The anterior surface of the uterus underwent a process of granulation, and fresh epithelium developed. The organ diminished in size, and eventually presented only the condition of sharp anteflexion. Kolpoperineorrhaphy should be performed in order to furnish additional support.

Ventral Hernia.—ABEL (*Archiv für Gynäkologie*, Band lvi. Heft 3) traced the subsequent condition of 665 patients upon whom cœliotomy had been performed at the Leipsic clinic in the course of eight years. Only five patients were not heard from, and in the course of his investigations the reporter sent out nearly 2500 (!) letters; 97.5 per cent. of the patients were actually seen and examined. The following deductions were drawn: The integrity of the cicatrix depends primarily upon the method of suture and the manner in which the wound heals. Separate suturing of the fascia gives the best results.

The early resumption of severe physical exercise after operation has a marked influence upon the development of herniæ, as they then usually appear early, especially when the abdominal bandage is laid aside.

Hernia is more common in fat women, because exact apposition of the fascial edges is more difficult than in thin subjects, since peritoneum and subperitoneal fat are apt to be interposed. The muscular tone and general condition of the patient have no influence on the solidity of the cicatrix, but the suture and healing of the wound—in short, ventral hernia after abdominal section—is usually due to the operator rather than to the patient.

Fixation of the Prolapsed Uterus.—MITTHAUER (*Münchener med. Wochenschrift; Centralblatt für Gynäkologie*, 1899, No. 14) reports cases of vaginofixation and supravaginal amputation of the cervix for prolapsus, with accompanying anterior and posterior kolporrhaphy, in which cystocele and rectocele recurred, though the uterus remained anteflexed. Even when the uterus is extirpated according to Fritsch's method the vaginal prolapse may return. The same criticism is applied to ventral fixation undertaken for the relief of this condition.

Plastic Operation for Prolapsus.—CHIARLEONI (*Arch. Ital. di Gin.; Centralblatt für Gynäkologie*, 1898, No. 14) describes the following operation: Triangular surfaces are denuded on the anterior and posterior vaginal walls, with their bases toward the cervix, and are sutured in the usual way. The cervix uteri is then dissected up to a distance of over two inches, is split laterally, and each half is united as high as possible to the anterior and

posterior edges of the vaginal wound. The portions of the cervix below the line of union are amputated. Finally a Hegar kolpoperineorrhaphy is performed. The writer claims that the cicatrices which result furnish a firm support to the uterus. Thirteen successful cases are reported.

Vaginal Hysterectomy with the Angiotribe.—TESSIER (Paris thesis; abstract in *Centralblatt für Gynäkologie*, 1899, No. 14) reports twenty-nine operations by Tuffier, with two deaths. His technique is similar to that of Doyen. The peritoneal cavity is opened anteriorly and posteriorly, the uterus bisected, and each half is pulled down. The angiotribe is then applied to the upper portion of each broad ligament from above downward, screwed tightly, and the tissue between the jaws of the instrument and the uterus is divided, after which the former is removed. The lower portions of the ligaments are treated in the same manner. In cases in which the uterus is fixed, clamps may first be used, the angiotribe being applied outside of them, after which the clamps are removed. The main point in the operation is to tighten the screw as firmly as possible while the instrument is held perfectly steady, otherwise when the tissues are friable it may tear away. It is also advisable not to grasp too much tissue at one time.

Vaginal Section.—DALLY (Paris thesis; *Ibid.*) argues against the advantages of the vaginal as compared with the abdominal incision, on account of the greater danger of injuring important structures. He would limit vaginal section to cases in which a collection of pus is easily accessible through the posterior fornix. Diseased adnexa are best removed by cœliotomy or vaginal hysterectomy. Explorative vaginal section furnishes much less information in a doubtful case than is obtained by the abdominal route. While the mortality is certainly small, the ultimate results of vaginal section are not as satisfactory as has been represented, especially in complicated cases; fistulæ frequently persist, requiring a subsequent radical operation for their cure.

Disinfection of the Hands with Alcohol.—AHLFELD (*Zeitschrift für Medicinalbeamte*, 1898, Heft 17 and 18) wonders that surgeons assign so little value to alcohol as a disinfectant. The statement of Mikulicz that it does not destroy the bacteria in the deeper layers of the skin he believes to be erroneous. Alcohol having a strength of 96 per cent. is preferable to weaker solutions. Bichloride solution is unnecessary, and other antiseptics in order to be efficacious must be used in such strong solutions as to injure the hands. The writer believes that the method of disinfection by scrubbing with soap and hot water and then with alcohol will be preferred in the future, by both surgeons and midwives. Moreover, brushes, catheters, intra-uterine tubes, etc., can be disinfected in the same way. A 50 per cent. solution of alcohol is useful for disinfecting the external genitals in obstetric practice.

TJADEN (*Zeitschrift für Geb. u. Gyn.*, Band xxxviii. Heft 3) believes that alcohol is a good germicide as well as a mechanical cleansing agent. From a large number of bacteriological experiments he infers that 75 and 90 per cent. alcohol has a more powerful bactericidal action than either 50 per cent. or absolute. He recommends Fürbringer's method. Over four hundred examinations of the hands of midwives were made after careful disinfection, and

in only nine instances were germs absent. Moreover, the women were kept in the clinic for a week at a time, so that they were not exposed to outside sources of infection. The writer's comment on these facts is that it is no wonder that the number of deaths in Germany from puerperal septicæmia is about 3500.

Appendicitis of Adnexal Origin.—Under this title BARNSBY (*Revue de Gyn. et de Chir. Abdom.*, 1898, Nos. 5 and 6) describes those cases in which disease of the appendix seems to be secondary to inflammatory conditions of the tubes and ovaries. He is skeptical regarding the existence of the so-called ligament, which Clado affirms extends from the right ovary to the appendix, and serves to establish a direct lymphatic connection between the two, having examined 127 cadavers without finding it in a single instance. The appendix and left tube and ovary are entirely independent anatomically, though they may become adherent after prolapse of the former or ascent of the latter through the traction of bands.

After such adhesion has occurred the appendiceal mucosa may be infected in the usual manner from within, or inflammation may extend from the diseased adnexa to the appendix. In the latter condition there is a simple adhesion of the tip of the appendix, attended with hyperæmia and the subsequent formation of new connective tissue. In more advanced cases the entire appendix may be surrounded by exudate, with resulting cirrhosis and disappearance of the lumen. There are no pathognomonic symptoms. Cœliotomy is always indicated.

The writer concludes with the advice to examine the appendix in every case in which the abdomen is opened, and to remove it without hesitation whenever the tip is adherent to the tube or ovary, whether its serum covering is congested or not.

Etiology and Development of Uterine Fibromyomata.—KEIFFER (*Soc. Belge d'Anat. Path.; La Gynécologie*, February 15, 1899), in studying the vascular supply of the uterine muscle by means of injections, found small, bloodless foci (*ilots*), which seemed to increase in size at the expense of the surrounding muscular fibres. Around the minute myomata were zones of vascular tissue, which evidently served to nourish them. In the centre of the nodule could often be seen what appeared to be the lumen of a blood-vessel which had not been reached by the injecting fluid. These myomata grow first centripetally, then horizontally.

The writer infers that uterine fibromyomata represent a localized hypertrophy of the tissue in the neighborhood of certain vessels (*réaction hypertrophique*), or the isolation of vascular areas due to thrombosis, prolonged pressure, or other circulatory disturbance. In the higher mammals, in which the muscular structure and vascular supply of the uterus is more complex, myomata are more apt to develop than in the lower varieties. This is borne out by clinical observation.

Intraperitoneal Fixation of the Uterus Through the Vagina.—GOTTSCHALK (*Centralblatt für Gynäkologie*, 1899, No. 4) reports fourteen cases of retroflexion treated by the following method: After replacing the uterus

(adhesions being broken up by posterior vaginal section) the cervix is drawn backward and held by an assistant, while the bladder is separated as in vaginal hysterectomy. After incising the peritoneum the utero-vesical fold of peritoneum is seized with forceps and drawn down over the anterior surface of the uterus, to which it is sutured as low as possible, the fundus being drawn through the opening. The peritoneal and vaginal wounds are then closed. The uterus is held in its normal position and retains its normal motility and relations to the bladder, which is not the case after Dührssen's operation.

New Operation for Inversion.—WESTERMARK (*Ibid.*) reports a case of irreducible inversion in which he opened the posterior fornix, inserted one finger into the ring from above, and, while steadying the uterus in this way, incised the posterior wall. By compressing the anterior wall with the thumb while the edges of the wound are pressed inward the inversion was easily reduced. The uterus was then brought through the vaginal opening, and the wound was sutured with catgut, after which the organ was replaced within the peritoneal cavity, and the wound in the posterior cavity and the posterior fornix was sutured. The patient made a good recovery.

Malignant Disease of the Stump After Supravaginal Amputation.—In a discussion on this subject (*Ibid.*) ABEL referred to two cases of sarcoma of the cervix following supravaginal amputation. Saenger cited eight cases of cancerous degeneration of the cervix, but thought that in view of the lower mortality of supravaginal amputation as compared with total extirpation (4.1 per cent. to 9.6 per cent., according to Hofmeier), the rare possibility of secondary malignant degeneration could be disregarded. The cervix could easily be removed *per vaginam* if it became diseased.

Freund's Operation for Vesico-vaginal Fistula.—ROMM and KAHN (*Ibid.*, 1899, No. 7) reports six cases of complicated vesical fistulæ operated upon successfully by the method described by Freund. Douglas's pouch was opened, the fundus uteri drawn down through the opening, and after freshening the edges of the fistula and the posterior uterine wall near the fundus the latter was sutured to the bladder, so as to close the fistula. Extensive granulation of the anterior serous surface of the uterus occurred, so that after healing the result was practically a kolpocleisis. Freund recommends that a permanent opening be established in the fundus in order to allow the escape of blood during menstruation, but the writers found that it was unneccessary, as the uterus soon atrophied after the operation.

Effects of Castration on the Voice.—CASTEX (*Revue Pratique d' Obstétrique et de Gynécologie*, 1899, No. 1) reports a series of observations on singers who had submitted to castration, with and without extirpation of the uterus. He infers that the operation has no direct harmful effect upon the voice, although the subsequent nervous disturbances may exert an influence upon it.

Exceptionally, the voice may assume a slightly masculine tone, but in general fine voices recover all their former range and flexibility, so that this is one of the least of the unpleasant sequelæ of castration.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA,

AND

MILTON B. HARTZELL, M.D.,

INSTRUCTOR IN DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

Treatment of Keloid by Injections of Creosote in Oil.—BALZER and MONSSEAUX (*Annales de Dermatologie et de Syphiligraphie*, 1898, No. 12) report a case of keloid of the lobule of the ear, following the removal of a small tumor, successfully treated by injections of a 20 per cent. solution of creosote in olive oil. At each seance about one cubic centimetre was injected into different parts of the keloidal tumors, of which there were two. These injections were followed by very little pain, but a few days after the first one a portion of the keloidal tissue sloughed out, leaving a deep ulcer, which soon cicatrized. At the time of making the report the smaller of the two tumors had entirely disappeared and the larger was considerably reduced in size.

Acute Pemphigus Neonatorum.—BERNSTEIN (*Monatshefte für Praktische Dermatologie*, Band xxviii. No. 1) reports five cases of a bullous eruption, all occurring in the same family. The first to be affected was a three-weeks-old infant; later three other children, aged respectively three, four, and seven years, together with the mother, were attacked. Syphilis, impetigo contagiosa, urticaria bullosa, and varicella were all considered in the diagnosis and excluded for what seemed to the author sufficient reasons. The eruption upon the infant was regarded as a pemphigus of the new-born, which was transmitted later by contagion to other members of the family.

[We are by no means satisfied that the diagnosis of impetigo contagiosa can be excluded in these cases.]

Subacute Infectious Purpura.—MOSSÈ and IVERSENC (*Journal des Maladies Cutanées et Syphilitiques*, November, 1898), at the meeting of the French Association for the Advancement of Science, held at Nantes, reported the case of a young man, aged seventeen years, who, after some excesses and a slight traumatism, showed lassitude, and later a typhoid condition, accompanied by marked elevation of temperature. An eruption of macules appeared, which rapidly extended; melæna followed, and death shortly occurred. During life examinations of the blood showed it to be sterile, but at the autopsy three varieties of micro-organisms were found in the liver—the bacterium coli; an organism resembling the colon bacillus externally, but staining by the Gram method; a short, thick bacillus, also staining by Gram. In the lungs streptococci were found. The authors regard

the previously debilitated condition of the patient as furnishing a soil favorable for infection. Experimental inoculations practiced upon animals produced in one instance hemorrhages into the lungs, in others the characteristic picture of infection with the colon bacillus.

Mixed Sclerodermia.—H. RADCLIFFE-CROCKER (*British Journal of Dermatology*, January, 1899), at a meeting of the Dermatological Society of Great Britain and Ireland, exhibited a patient with the atrophic form of morphœa upon the chest and perceptible hardening of the deltoid and triceps, especially on the left side. Improvement, to a certain extent, had occurred under treatment. The skin over the chest was much atrophied. The exhibitor regarded the case as going far to prove that superficial morphœa and deep sclerodermia were only variations of the same process.

Multiple Cutaneous Lupus Following Measles.—ADAMSON (*British Journal of Dermatology*, January, 1899) reports a case of verrucose lupus, with multiple lesions, occurring in a boy three years of age, in which the eruption was said to have appeared first during an attack of measles when the patient was two years of age. The lesions appeared simultaneously, and since the first eruption there had been no new lesions, although the old ones had grown larger. The eruption consisted of raised, purplish-brown patches, from a tenth to a quarter of an inch in diameter. Many were scaly, and those upon the hands were warty. They were most abundant upon the right elbow, the right wrist and hand, on both knees, and the right ankle and foot. Later the patient was treated for post-pharyngeal abscess and hip-joint disease. There was no family history of tuberculosis.

An Affection of the Skin Due to the Demodex Folliculorum.—DEAMICIS (*British Journal of Dermatology*, January, 1899), at the annual meeting of the Italian Society of Dermatology and Syphilography, described a parasitic affection of the skin due to the demodex folliculorum, which appeared as a pigmented patch of a café-au-lait color upon the chin and lip of a woman, aged twenty-seven years. The discoloration was at first thought to be due to the microsporon furfur, but this fungus could not be found. Large numbers of demodex were present, however, and treatment directed to the removal of this organism was followed by the gradual disappearance of the pigmentation. Majocchi likewise had seen two cases in which the demodex had been found in pigmentation of the skin accompanied by slight desquamation.

Tuberculous Folliculitis.—KRACHT (*Annales de Dermatologie et de Syphiligraphie*, 1898, No. 12), at a seance of the Dermatological Society of Moscow, presented a youth, aged seventeen years, with an abundant eruption upon the face, the backs of the hands, the extensor surface of the forearms, the buttocks, the knees, and over the tendo Achillis. The anterior surface of the forearms was entirely, the trunk almost, free. The eruption consisted of millet-seed-sized, bright-red, umbilicated nodules, covered with a small crust. Between the lesions were numerous small cicatrices. The eruption

began as a macular one, but the macules were soon transformed into papules, and later into crusts. The disease was accompanied by slight itching.

A Papular Persistent Dermatosis.—JOHNSTON (*Journal of Cutaneous and Genito-urinary Diseases*, February, 1899), under the above title, reports a case of a hitherto undescribed affection. A woman, aged fifty-two years, suffered from a papulo-vesicular eruption scattered over the face and limbs. On the face it occupied the central portions—forehead, cheek, lips, and chin. On the extremities the extensor surfaces were affected. The lesions varied from a pin-head to a third of an inch in size, and were rose-red at first, but became grayish-white later from thickening of the horny layer of the epidermis. They began subcutaneously, involving the epidermis only after a considerable length of time. There was marked itching, so violent as to prevent sleep. Examination of excised lesions showed that the entire corium was affected by an inflammatory process of a chronic character, a special and peculiar feature of which was the involvement of the medullated nerves of the reticular layer. The epidermis was only secondarily involved, the chief changes being great increase in the horny layer and the formation of a vesicle near the centre of the papule, through degeneration of the prickle-cells. The author regards the malady as a neurotic inflammation more closely related to the prurigo of Hebra than to any other recognized skin affection.

Malignant Growths Arising from Pigmented Moles.—GILCHRIST (*Journal of Cutaneous and Genito-urinary Diseases*, March, 1899) reports two cases of melano-carcinoma, one of which certainly, the other probably, began in a pigmented mole. The first case occurred in a full-blooded negro, aged fifty-eight years, and the primary growth was followed by numerous metastases in the skin, the superficial lymphatic glands being unaffected even up to the time of death. Although there was no history of a mole having been present at the site of the primary lesion, the author thinks it probable that the neoplasm began in such a growth. The second case began in a pigmented mole upon the face. In connection with these two cases a study of the histology of pigmented moles was made, especially with regard to their origin; and as the result of this study the author is in accord with Unna that the epithelioid cells of which moles are chiefly composed are of epidermal origin. Any malignant growth originating from these cells, therefore, must be regarded as carcinomatous, not sarcomatous.

Trophic Dermatosis Following Fractures.—ZEISLER (*Journal of Cutaneous and Genito-urinary Diseases*, July, 1898) calls attention to certain trophic alterations which he has observed after fractures. Having had the misfortune to fracture his right femur, he observed that the growth of the nails upon the toes of the corresponding side ceased for six weeks. In addition to the suspension of the growth of the nails, small isolated, deep-seated vesicles, which itched intensely, developed upon the sole of the right foot. These the author believes resulted from the altered nutrition of the limb following upon the fracture. He also reports a case of papulo-vesicular eruption following shortly after a fracture of the radius in a baby.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

W. T. COUNCILMAN, M.D.,

SHATTUCK PROFESSOR OF PATHOLOGICAL ANATOMY, HARVARD UNIVERSITY,

AND

F. B. MALLORY, M.D.,

ASSISTANT PROFESSOR OF PATHOLOGICAL ANATOMY, HARVARD UNIVERSITY.

Concerning Infarcts of the Kidney.—RIBBERT (*Virchow's Archiv*, 1899, Band clv, Heft 2, S. 201) states first the facts which are generally accepted in regard to infarctions of the kidney, viz.: Infarctions are wholly hemorrhagic only exceptionally; as a rule, they are pale, and represent anæmic necroses which at first are limited toward the normal tissue by a zone of cellular infiltration and hyperæmia. Later a formation of connective tissue takes place at the border, the necrotic material gradually disappears, and a depressed scar remains. He then discusses certain features of renal infarcts which he has studied, partly as found in man, partly as produced experimentally in animals. The form of the renal infarct has usually been described as wedge-shaped. As a matter of fact, wedge-shaped infarctions, in the sense in which they occur in other organs, do not occur in the kidney. The interlobular arteries of the cortex do not diverge, but run parallel toward the capsule. Stoppage of them or of the larger arteries (arteriæ arciformes) supplying them leads in the cortex to necroses which are quadrilateral in shape. This is seen best when the whole thickness of the cortex is involved. The infarctions are quadrilateral on all sides. Naturally the side toward the medulla is a little smaller than the capsule side, because the interlobular vessels diverge slightly from below upward. According to the number of interlobular arteries affected the infarction may be a horizontally lying rectangular solid, a cube, or, in extreme cases, where only one interlobular artery is obstructed, a vertically placed, rectangular column. When a number of adjoining interlobular arteries are obstructed at different heights the lower surface of the infarct may be very irregular in shape. If the central vessel in one of these areas is occluded near the medulla, and the vessels around it near the cortex, a wedge-shaped infarction may be formed. The term wedge-shaped applies more appropriately, however, to infarcts involving both cortex and medulla, because the vessels of the pyramids converge toward the papilla. But such infarctions differ from those in the lung and spleen, because the occluded vessel lies not at the apex of the wedge, but in the middle, where the cortex and medulla join.

During the first twelve to sixteen hours the necroses are hyperæmic in consequence of the blood entering through the capillary collateral circulation. Then the circulation ceases. The blood coloring-matter is dissolved out, and the infarction becomes pale. The early hyperæmia and the transudation from the bloodvessels explain the prominence of the infarction above the

surface of the kidney. Histologically, the necrosis of an infarction is evident earliest at the periphery, because, owing to the better circulation of the lymph there, the nuclei are dissolved out quickly, and hence do not stain. For a number of days the infarction shows three zones at its periphery, from within outward. They are, first, a zone of cellular infiltration; second, a zone of hyperæmia; third, a zone of partial necrosis. The infiltraton of leucocytes at the periphery of an infarction is well marked in twenty-four hours.

It is chiefly of interest because it limits the collateral circulation, and finally stops it entirely. Beneath the capsule it takes place more slowly, probably because the circulation there is less active. The hyperæmic zone is due to congestion of the bloodvessels resulting from a collateral circulation under diminished blood pressure. The pale zone outside of it is only relatively anæmic. The circulation in it is fairly active; the pale color is due in part to partial necrosis of the tubules.

The Importance of Injuries of the Arteries in the Production of True Aneurisms and Arterio-sclerosis.—MALKOFF (*Ziegler's Beiträge*, 1899, xxv.) has succeeded in producing aneurisms experimentally. He employed two methods, either injuring the wall directly by compression or indirectly by locally increasing the intravascular pressure. In the compression experiments, which numbered twenty-eight, the femoral, brachial, and carotid arteries of the dog were selected. The arterial trunk was exposed and compressed with a pair of Péan's forceps. Excessive force was avoided, so that the continuity of the vessel-wall remained intact and no hemorrhage occurred. The skin incision was closed with sutures. The operations were performed under aseptic conditions, and the wounds healed without suppuration.

In two cases the second method was employed. The common carotid artery was subjected to a strong local distention by the injection of physiological salt solution. Temporary ligatures were first applied to the common carotid and superior thyroid arteries; a canula inserted into the former and a pressure of two atmospheres applied for fifteen seconds. The vessel became considerably distended.

The arteries were examined at varying lengths of time after the injury, ranging from four hours to a hundred days.

In the arteries injured by compression tears occurred in the intima, elastica interna, and media. A spindle-shaped or cylindrical aneurism developed; but after forty days the lumen was restored to normal size or even became abnormally small. This was brought about by arterio-sclerotic changes. The intima was markedly thickened and a newly developed elastic tissue plainly discernible in it. The elastic fibres developed themselves from the peripheral portion of the cells and formed a delicate network. A new formation of connective-tissue also occurred in the media. Similar but less marked changes were obtained by local distention of the vessels. Scattered areas of fatty degeneration were found, and even within twenty days after the injury a deposition of lime-salts.

[In these experiments of Malkoff the development of arterio-sclerosis began at once after dilatation of the vessel had taken place. This is in accord with Thoma's view that arterio-sclerosis is in a certain sense a compensation pro-

cess and tends to prevent rather than cause the aneurismal formation. These experiments also confirm the recently published observations of Dmitrijeff, Jores, and others, who claim that a new formation of elastic tissue occurs in arterio-sclerosis.—ED.]

On the Morphology of Intravascular Coagulation and Thrombus Formation.—ARNOLD (*Virchow's Archiv*, 1899, Band clv.) thinks his observations show conclusively that the blood-platelets are formed from the red blood-corpuscles, and that certain degenerative changes in the red blood-corpuscles stand in close relation to fibrin formation and blood coagulation.

These changes are of three kinds: (1) Erythrocytolysis, a simple diminution in size leading to the formation of microcytes and finally complete disappearance. This process of solution can be demonstrated by staining with methyl violet. The red corpuscles appear surrounded by a zone which agrees in its staining reaction with their contents. He designates as (2) erythrocytorrhexis, the extrusion of round, refractive granules—A. F. Müller's "blood dust," and the nipping off (Abschnürung) of particles of varying size. (3) Erythrocytoschisis is the breaking up of the red blood-corpuscles simultaneously or in rapid succession into disk-like bodies. Many of these fragmentation products are identical in structure with the blood platelets.

In extravascular coagulation Arnold always found the fragmentation more active than under other conditions—*e. g.*, a suspension in physiological salt solution.

In the mesenteric vessels of living animals he was able directly to observe the formation of blood-platelets by erythrocytorrhexis and erythrocytoschisis, thus definitely settling, he thinks, the question of their origin. In beginning coagulation the leucocytes were either absent or present only in small numbers. They showed no signs of degeneration even when the act of coagulation was completed.

He studied in rabbits the thrombosis produced by the injection of foreign bodies into the circulation, and also vital and agonal thrombi in man, and was able to demonstrate in each the formation of blood-platelets from red blood-corpuscles, and also the production by erthroctyolysis of microcytes and "shadow" corpuscles. Wlassow distinguishes two kinds of fibrin-threads: 1. The simple or homogeneous. 2. The complex or granular. Arnold suggests that the former arise by plasmolysis, the latter by fragmentation of the erythrocytes, platelets, and granules.

An Aneurism of the Temporal Artery.—MANZ (*Beiträge z. path. Anat. u. z. allg. Path.*, Band xxiv., Heft 3, S. 534) describes an unusually interesting case of traumatic aneurism of the temporal artery. The tumor, which in the course of two years had reached the size of a hazel-nut, upon histological examination presented an irregularly shaped cavity, the walls of which corresponded in a general way to the walls of the artery. The smooth muscle fibre of the tunica media was limited to about one-fifth of the wall of the sac, elsewhere the wall consisted of connective tissue and elastic fibres lined throughout with endothelium. The "inner coat" was everywhere thickened, in many places sending papillary projections of various sizes and shapes inward into the cavity, dividing it up into irregularly shaped canals. Orcein

preparations showed an abundance of elastic tissue; thick fibres placed closely together under the endothelium, a few delicate fibres between this and the remains of the inner elastic plate near which there was scarcely any elastic tissue, and a "nucleus" of elastic fibres situated in the long axis of the papillary projections of the inner coat.

The writer concludes that the conditions here existent represent a process of repair originating in the inner coat of the damaged vessel, and consisting of a new growth of connective tissue and of elastic tissue. The latter he believes to be derived not from the inner elastic plate, but from elastic tissue fibres present in the subendothelial connective-tissue.

The Denitrifying Action of the Bacillus Typhosis and the Bacillus Coli Communis.—GRIMBERT (*Annales de l'Institut Pasteur*, January, 1899) investigates the cause of a phenomenon he had observed nearly a year before, namely, that the bacillus coli communis and the bacillus typhosus do not disengage gas in 1 per cent. solution of peptone plus 1 per cent. potassium nitrate, but that gas is produced when the peptone solution is replaced by bouillon made of meat extract.

His present work furnishes the following conclusions:

1. Whenever the bacillus coli communis and the bacillus typhosus disengage gases in a medium containing nitrates the volume of nitrogen recovered is always at least double the amount which the nitrate destroyed could possibly produce.

2. Consequently the nitrogen does not come exclusively from the nitrates, but also results from the denitrifying action of the bacillus upon amido principles in the culture medium.

3. Gas production seems to result from the secondary reaction which nitrous acid, formed by the bacteria, exerts on these amido substances.

Nitrites do not hinder the action of the bacilli, as the latter develop very well in a medium containing 1 per cent. of nitrites, and disengage an equal or even larger quantity of nitrogen than in the same medium containing 1 per cent. of nitrates.

The rôle of amido materials in denitrification, as the result of the action of the colon bacillus, may perhaps throw some light on the still pending question of the loss of nitrogen in the soil.

Notice to Contributors.—All communications intended for insertion in the Original Department of this Journal are received only *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from abroad written in a foreign language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. ALFRED STENGEL, 1811 Spruce Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 59 Welbeck St., Cavendish Sq., London., W., Eng.

INDEX.

ABDOMEN, penetrating gunshot wound of, 471
Abdominal hysterectomy with clamps, 240
Abortion, induction of, by nitrate of silver, 490
missed, 112
Abscess, chronic, of soft palate, 492
of brain, treatment of, 439
of liver, 474
Abscesses of cerebellum from infection through labyrinth, 406
subcutaneous, due to typhoid bacillus, 501
Achlorhydria, 423
Acne varioliformis capillitii, 362
Acute anterior poliomyelitis, etiology of, 718
Adnexa, disease of, following vaginal hysterectomy, 239
relations of disease of, to retroflexion, 238
Addison's disease, diagnosis of, 459
in childhood, sudden death in course of, 467
Adenoid vegetations, new electric snare for ablation of, 494
Adenoma of soft palate, 493
Adenomyoma of uterus, 485
Agglutination and serum diagnosis in diphtheria, 711
Air, superheated, 104
Airol in pellagrous intestinal diseases, 359
Alcohol, germicidal action of, 123
Aldrich, C. J., head-nodding and head-rotation usually associated with nystagmus in young children, 158
Alkalinity of blood, changes in, 114
Alopecia areata, transmissibility of, 362
Anæmias of infancy, 719
classification of, 464
Anæsthesia, infiltration, 234, 726
Anal fissure, electricity in treatment of, 485
treatment of, 612
Anasarca due to adherent pericardium, 608
Aneurism of temporal artery, 743
Angiokeratoma, 115
Angiosarcoma, multiple-metastatic, 629
Animal *vs.* vegetable ferments, 359
Antistreptococcic serum in puerperal septicæmia, 731
Antistreptococcus serum, treatment of infection by, 603
sero-therapy, experimental, 613
Antitoxins for tuberculosis, experimental studies on, 56
in treatment of traumatic tetanus, 613
Antivenomous serum, curative power of, 229
Aorta, tuberculosis of 19
Aortic aneurism, treatment of, 341
Apocynum cannabinum, 358
Appendicitis of adnexal origin, 736
simulating neoplasms, 483
Asepsis in operations, 349
Aseptic operations, employment of rubber gloves in, 225
Asthma, hysterical, 458
Atresia of vagina, labor complicated by, 618
Atrophying hyperkeratosis, 363
Atropine in ocular therapeutics, use and abuse of, 727
Auditory canal, fractures of, 118
hyperostosis of, 117
Auto-intoxication in pregnant patient, 490
Automatic pulsation of fœtal heart, 619

BACILLUS aërogenes capsulatus, isolation of, 172
Bacteria in normal conjunctiva, 623
Bacteriology of pertussis, 468
of simple posterior basic meningitis of infants, 250
Bailey, P., hemiatrophy of brain without disturbances of intelligence or personality, 321
Baldwin, E. R., experimental studies on the preparation and effects of antitoxins for tuberculosis, 56
Baldwin, E. R, leukæmia combined with pulmonary tuberculosis, 656
Bardenheuer's operation for hypospadia of glans penis, 603

Barker, L. F., glioma of lower cervical region of spinal cord, 648
Bathing, effects of, upon new-born infant, 221
Bedsore, acute, following parturition, 488
Beyea, H. D., gastroptosis, 663
Bicycle in cure of hernia, 610
Bier's new osteoplastic amputation, 351
Birds, changes in organs of, infected with hæmocytozoa, 371
Bismuth-chinolin rhodonate, 236
Bitemporal hemianopsia and diabetes insipidus, coincidence of, 464
Black, N. M., a study of multiple-metastatic angiosarcoma, 629
Bladder, extirpation of, for neoplasm, 95
myxoma of, 605
Blake, J. A., relation of trachea and bronchi to thoracic walls, 313
Blood, coagulation action of gelatin on, 211
Neusser's granules in, 139
Bloodless reduction of congenital dislocations of hip, 602
Bloodlessness as a local anæsthetic, 725
Blood-platelets, chemical examinations of, 88
Blumer, G., tuberculosis of aorta, 19
Bolognini's symptom in measles, 219
Bone-plates, charred, filling of cranial osseous defects with, 351
Brain, abscess of, treatment of, 439
hemiatrophy of, 321
tumor, case of, 526
Broad ligaments, smooth muscle-fibres in, 484
Bromoform, poisoning by, 221
Bronchial asthma, 709
treatment of, 100
Broncho-pneumonia, 222
Bullard, W. N., syringomyelia, 265
Bullets detected in brain by Röntgen rays, 93
Burnett, C. H., mechanism of ear vertigo and its relief by removal of incus, 419
Burns of external auditory canal and membrana tympani, 118
plastic operation for, 92
Burrows, F. G., a study of leucocytosis associated with convulsions, 503

CÆSAREAN section in Phillippines, 488
Calculi, tubal, 617
Calculous nephritis, diagnosis of, by means of Röntgen rays, 93
Calculus, tonsillar, 494
Calomel in lupus vulgaris, 233
Camac, C. N. B., cholecystitis complicating typhoid fever, 275
Cancer of prolapsed uterus, 617
of uterus, early diagnosis of, 615
pylorectomy for, tetany checked by, 600
some recent literature regarding, 579
Cancerous degeneration of uterine fibroid, 616
Capsules, glutoid, in diagnosis, 598
Carcinoma of pancreas, 131
of sigmoid flexure, excision of, 473
primary, of Fallopian tube, 484
Cardiac epilepsy, 457
Casein ointment in dermatology, 232
Castration, effects of, on voice, 737
Cerebellar tumor, 125
Cerebellum, abscesses of, 406
Cerebro-spinal meningitis, epidemic, treatment of, by inunctions of unguentum Credé, 607
Cervix, endothelioma of, 14
Cheiromegaly, case of, in syringomyelia, 458
Chloride metabolism in pneumonia and acute fevers, 597
Cholecystitis complicating typhoid fever, 275
post-typhoid, 474
Cholelithiasis, surgical treatment of, 474
Chorea, treatment of, 360, 479
Church, A., cerebellar tumor, 125
Cider, effect of, on microbes, 497
Cirrhosis of liver, re-establishing surgically the interrupted portal circulation in, 723
Clitoris, tumors of, 106
Cocaine anæsthesia, local, 729
practical point upon action of, 493
Coiling of umbilical cord in twins having one amnion, 111
Colica vermicularis, 472
Collins, J., critical summary of recent literature on treatment of abscess of brain, 439
Colon bacilli reacting to serum of typhoid-fever patients, 627
Colporrhaphy, median, 617
Combined typhoid and malarial infection, 25
Concha, cylindroma of, 116
Conjunctivitis, protargol for, 365
Copper in foods, physiological action of, 124
Corpus luteum, origin, growth, and fate of, 733
Coxa vara, 352, 723, 724

Cranioclast, new, 110
Creosote in treatment of lobar pneumonia, 100
Critical summary of recent literature on treatment of abscess of brain, 439
of question of fatty degeneration, 569
Cyclic vomiting, 465
Cystitis, treatment of, 237
Cysto-colostomy in extrophy of bladder, 229
Cysts, vaginal, 482
Czerny's method of treating ulcerating epithelioma of face, 364

DARIER'S disease, relationship of, to ichthyosis, 362
Decidual cell, function of, 731
Demodex folliculorum, affection of skin due to, 739
Denitrifying action of bacillus typhosis and bacillus coli communis, 744
Dermatitis herpetiformis followed by cicatrices and epidermic cysts, 113
Dermoid cyst complicating pregnancy, 488
Dermoids of pelvic connective tissue, 483
Detachment of retina, 553
Deviations of nasal septum, 492
Diabetes from a gynecological stand-point, 242
insipidus, 490, 600
mellitus, acute, 339
Diabetic coma, cure of, by large injections of artificial serum, 728
treatment of, 235
Digitalis, indications for, 480
Diphtheria, accidents in serum injections for, 477
agglutination and serum diagnosis in, 711
antitoxin by the mouth, 607
transitory glycosuria in, 628
Diplococcus peritonitis in children, 90
Disinfectant properties of ordinary soaps, 497
Disinfection of hands with alcohol, 106, 735
Duodenal ulcer, peptic, 463
Dupuytren's contraction of the palmar and digital fascia, clinical study of, 285
Dyspepsia in early stage of pulmonary tuberculosis, 459

EAR, foreign bodies in, 116
vertigo, mechanism of, 419
Eclampsia, temperature in, 246
Ectopic gestation, 489, 732
Ectopic gestation, early treatment of, 619
Eczema, 115
Edsall, D. L., chronic continuous gastro-succorrhœa, 693
Electric relation of heart in tetany, 599
Electricity in treatment of anal fissure, 485
Embryonal heart, automatic beating of, 244
Empyema of frontal sinuses and intracranial infection, 305
Endermol, 236
Endocarditis, septic, 356
Endometrium, excision of entire, 616
Endothelioma lymphangiomatodes of cervix uteri, 14
England's declining birth-rate and marriage-rate, 122
Entero-plastic operation to overcome or prevent stenosis, 431
Entropion of lower lid, 625
Epidermoids and dermoids of arachnoid of brain and cord, 249
Epilepsy, bromides in, 477
cardiac, 457
Epithelioma of face, 364
Ergot, abuse of, in treatment of hemorrhage, 357
Erythema multiforme on buccal mucous membrane, 115
Erythromelalgia, case of, 1
Essential oils and other volatile substances on growth of bacillus tuberculosis and in treatment of phthisis, action of, 614
Ether pneumonia, 475
Ethyl-alcohol, immunization by, 612
Excision of carcinoma of sigmoid flexure, 473
of entire endometrium, 616
Exercise and hernia, 610
Exfoliative dermatitis, general, 361
Experimental antistreptococcus sero-therapy, 613
External urethrotomy, 168
Extirpation of bladder for neoplasms, 95
Extrophy of bladder, cure of, by cysto-colostomy, 229

FACIAL paralysis of central origin, 345
Fallopian tube, papilloma of, 106
tube, primary carcinoma of, 484
torsion of, 485
senile changes in, 482
Fat starvation, experimental study of, 370
Fatty degeneration, critical summary of question of, 569
Feet, sweating of, 480

Femur, separation of head of, 723
vicious positions of, treatment of, 228
Fenger, C., entero-plastic operation to overcome or prevent intestinal stenosis, 431
Fibroids, submucous, potassium iodide in, 481
Fibroma of tube, 485
Fibromyoma and carcinoma uteri, simultaneous occurrence of, 617
Fixation of uterus, 620
Flexner, S., glioma of lower cervical region of spinal cord, 648
Fœtal heart, automatic pulsation of, 619
Food poisoning, 495
Foods, copper in, 124
Foreign bodies in œsophagus, 492
Formalin in treatment and removal of inoperable malignant growths, 611
Foster, M. L., detachment of retina, 553
Fractures of auditory canal, 118
of radius, 601
Frazier, C. H., some recent literature regarding cancer, 579
Freund's operation for vesico-vaginal fistula, 737
Friedreich's ataxia, symptomatology of, 717
Friend, S. H., A study of multiple-metastatic angiosarcoma, 629
Frontal sinus, lesions of, operative treatment of, 120
sinuses, empyema of, 305
Furuncles, 117
Furunculosis in nurslings, pathogenesis of, 348

GASTRIC ulcer, perforating, successful operation for, 471
Gastro-enteritis in hospitals, contagiousness of, 716
Gastroptosis, 663
Gastrosuccorrhœa, chronic continuous, recent literature on, 693
Gelatin hæmostasis, 357
injections of, in aortic aneurism, 341
Genital prolapse, operations for, 107
Germicidal action of alcohol, 123
Gibson, C. L, empyema of frontal sinuses and intracranial infection, 305
Glioma of lower cervical region of spinal cord, 648
of retina, 367
Glutoid capsules in diagnosis, 598
Glycosuria and gallstone-colic, 217
in diphtheria, transitory, 628
Goitre, operations for, 225
Gonorrhœal arthritis, treatment of, 233
septicæmia and ulcerative endocarditis, 561
Goodale, J. L., urticaria of tongue, associated with achlorhydria, 423
Gordinier, H. C., a case of brain tumor at base of second left frontal convolution, 526
Gout, treatment of, 729
Green, J. O., abscesses of cerebellum from infection through labyrinth, 406
Growths, lymphoid, 493

HÆMATOZOAN infection of birds, 369
Hæmostasis, gelatin, 357
secured by angiotripsy, 350
Hands, disinfection of, 106
Harben lectures, 375
Hayden, J. R., external urethrotomy, 168
Head-nodding and head-rotation, 158
Heart and pericardium, traumatisms of, 724
electric relation of, in tetany, 599
-murmurs, experimental inorganic, 714
primary congenital hypertrophy of, 608
Heat and cold, changes produced in epithelium by moderate degrees of, 625
Hemianopsia and blindness following uterine hemorrhage, 368
Hemiatrophy of brain, 321
Heredity of tuberculosis, 340
Hernia, bicycle in cure of, 610
radical operations for, 721, 722
Herter, C. A., carcinoma of pancreas, 131
Hewes, H. F., urticaria of tongue, associated with achlorhydria, 423
Hip, congenital dislocation of, bloodless reduction of, 602
Holocain, anæsthetic and germicidal actions of, 121
Hudson, W. H., glioma of lower cervical region of spinal cord, 648
Hydatid cysts of kidney, 353
Hydrastine hydrochlorate in uterine hemorrhage, 485
Hydrocele, radical treatment of, 470
Hyperostosis of auditory canal, 117
Hypertrophic cirrhosis of liver, 215
Hypospadia of glans penis, Bardenheuer's operation for, 603
Hysteria, ocular evidences of, 42
Hysterical diaphragmatic asthma, 458
paroxysmal œdema, 216

IGNI-EXTIRPATION of uterus, results of, 617
Immunization by ethylic alcohol, 612
Infancy, anæmias of, 464
Infantile therapeutics, tannalbin in, 359
Infants, resuscitation of, 620
Infection by diplococcus intracellularis of Weichselbaum, 250
from hands of tuberculous persons, 123
of ovarian cysts, 105
treatment of, by antistreptococcus serum, 603
Infectious purpura, subacute, 738
Infiltration anæsthesia, 234, 726
Injection of salt solution and gelatin, effect of, 211
Injuries of arteries in production of true aneurisms and arterio-sclerosis, 742
Inoculation theory of malarial infection, 213
Insomnia, treatment of, 355
Intestinal fistulæ resulting from clamp, 242
occlusion complicating pregnancy and labor, 730
stenosis, operation for, 431
Intestine, lesions of, in heredo-syphilitics, 717
sarcoma of, 348
Intestines, primary sarcoma of, 473
typhoid perforation of, 595
Intima, new formation of elastic fibres in, 249
Intra-abdominal shortening of round ligaments, 615
Intraligamentary pregnancy, treatment of, by vaginal incision, 487
Intraperitoneal fixation of uterus through vagina, 736
Intravenous injections of normal saline solution, 234
Inversion, new operation for, 737
Piccoli's operation for, 108

KELOID, treatment of, 738
Kernig's sign, value of, in diagnosis of meningitis, 218
Kidney, concerning infarcts of, 741
hydatid cysts of, 353
movable, in children, 347
new method of incision in operations on, 96
Kidneys, accessory, in broad ligaments, 241
effects of different anæsthetics upon, 101
Kober, G. M., sarcoma of testicle, 535
Kocher's method in cure of reducible hernia, 722
Koplik's early diagnostic sign of measles, 343

LABOR complicated by atresia of vagina, 618
Laborde method of resuscitation in etherization, value of, 350
Laparotomy in tubercular peritonitis, 603, 711
Laryngeal complications in measles, 469
polyps, 491
nerve, inferior, paralysis of, 495
tuberculosis, treatment of, 100
Larynx, morbid growths of, 491
parasyphilitic affections of, 494
Leucocytosis associated with convulsions, a study of, 503
Leukæmia combined with pulmonary tuberculosis, 656
disease of nervous system in, 599
Leukoplakia oris in psoriasis and other dermatoses, 361
Ligation of uterine arteries, 484
Liver abscess, 474
functional disorders of, 478
traumatic affections of, 224
Lobar pneumonia, creosote in, 100
Loomis Sanitarium for Consumptives, annual report of, 476
Lumbar puncture in the child, 715
Lupus, calomel in treatment of, 114
erythematosus, treatment of, 114
following measles, 739
tuberculin in treatment of, 481
vulgaris, calomel in, 233
Lymphadenitis, operation in, 350
Lymphoid growths, 493
Lyon, I. P., combined typhoid and malarial infection, 25
Lysol poisoning following an intra-uterine douche, 109

MALARIAL fever, structure of semilunar and flagellate bodies of, 215
infection, inoculation theory of, 213
Malignant growths arising from pigmented moles, 740
inoperable, 611
tumors of ovary, 105
Maragliano's serum in cutaneous tuberculosis, 363
Marmorek's serum for facial erysipelas, 233

Massage in treatment of post-operative ileus, 240
Maternity, precocious, 246
Measles, Bolognini's symptom in, 219
Koplik's sign in, 343
laryngeal complications in, 469
Meat, tuberculous, 498
Mechanism of ear vertigo, 419
Meconium, presence of, from a medico-legal aspect, 112
Medial colporrhaphy, 617
Medical diseases, saline solutions in, 356
uses of Röntgen light, 675
Melaleuca viridiflora, pure essence of, 100
Melanoplakia of mucous membrane of mouth, 459
Meningitis, value of Kernig's sign in, 218
Menstruation, condition of tubes during, 484
tubal, 240
Metallic percussion, value of, combined with auscultation in diagnosis of pleural effusion in children, 466
Metals, soluble, 97
Method of obtaining sputum of young children for bacterioscopic examination, 469
Microbes, effect of cider on, 497
Mitchell, S. W., case of erythromelalgia, 1
Morbid growths of larynx, 491
Morphology of intravascular coagulation and thrombus formation, 743
Movable kidney in children, 347
Multiple-metastatic angiosarcoma, 629
Myocarditis, acute diffuse, 462
Myopia, high, operative treatment of, 623
Myxoma of bladder, voluminous, 605

NASAL aprosexia, 493
septum, deviations of, 492
Nephrolithiasis, diagnosis of, by Röntgen ray pictures, 351
Nerve transplantation, peripheral, 377
Neuralgias, treatment of, 235
Neuritis, retrobulbar, 150
Neusser's perinuclear basophilic granules in blood, presence of, 139
New base for application of drugs to skin, 729
suture for intestines, 472
Nichols, J. B., clinical study of Dupuytren's contraction of the palmar and digital fascia, 285
Nipple, fissures of, treatment of, 232
Nitrous oxide and its uses, 609
Noma pudendi due to Loeffler bacillus, 221
Norris, C., bacillus aërogenes capsulatus, isolation of, 172
Northrup, W. P., carcinoma of pancreas, 131

OBESITY, treatment of, with thyroid preparations, 462
Ocular evidences of hysteria, 42
Œdema, hysterical paroxysmal, 216
Œsophageal stenosis following scarlet fever and diphtheria, 87
Œsophago-duodenostomy, successful, 472
Œsophagus, foreign body in, 492
Oöphorectomy for inoperable breast-cancer, 91
Operations, asepsis in, 349
Ophthalmia neonatorum, treatment of, 480
sympathetic, 120
Ophthalmic zoster due to postassium iodide, 113
Orbit, sarcoma of, 366
Orchitis, typhoid, 91
Orthoform in treatment of fissures of nipple, 232
Osler, W., clinical features of sporadic trichinosis, 251
Osteomalacia, pathogenesis of, 239
treatment of, 243
Osteomyelitis, chronic, of lower extremity of femur, 227
Otitis externa, primary, 118
Ovarian cyst, infection of, 105
cysts, influence of pregnancy on, 486
extract, results of treatment with, 482
Ovariotomy, double, during pregnancy, 490
Ovaries, transplantation of, 483
Ovary, malignant tumors of, 105
rupture of, 105
removal of other, in ovariotomy, 486
Oysters and typhoid fever, 373
Oxycamphor, 475
Ozæna treated by antidiptheritic serum, 233

PAD on dorsum of foot in rickets, 346
Palate, soft, adenoma of, 493
chronic abscess of, 492
Pancreas, carcinoma of, 131
disease of, in hereditary lues, 460
Papilloma of Fallopian tube, 106
Papular persistent dermatosis, 740
Paralysis in whooping-cough, 468
of inferior laryngeal nerves, 495
Parasyphilitic affections of larynx, 494
Parinaud's conjunctivitis, 366

Parotitis, epidemic, 466
Parovarian cysts, tumor of, 615
Pathogenesis of furunculosis in nurslings, 348
Pelvic connective tissue, dermoids of, 483
Pelvis, contracted, labor complicated by, 242
Pemphigus foliaceus with osteomalacia, case of, 362
neonatorum, acute, 738
Penetrating gunshot wound of abdomen, 471
Penis, suprapubic transplantation of, 354
Peptic duodenal ulcer, 463
Percussion, palpatory, 713
Peripheral nerve transplantation, 377
Peritonitis, general, treatment of, 720
Pertussis, bacteriology of, 468
Peterson, R., peripheral nerve transplantation, 377
Pharmacological action of thyroid gland, 230
Pharyngeal syphilitic lesions and diphtheria, differential diagnosis of, 494
Philippines, Cæsarean section in, 488
Phlebitis and lymphangitis of pelvic organs, diagnosis between, 243
Phlegmasia alba dolens in pneumonia, 217
Phosphorus, influence of, upon rhachitis, 467
Phthisis, treatment of, 614
Piccoli's operation for inversion, 108
Pityriasis rubra, 361
Placenta, development of, 244
Placental polypi in Fallopian tubes, 241
Plastic closure of osseous defects after operation on mastoid process, 721
operation for burns, 92
Pleural and pericardial effusion, physical diagnosis of, 710
Pleurisy, typhoidal, 627
Pneumococcus conjunctivitis, 622
Pneumonia, ether, 475
Pneumothorax from gas-forming bacteria, 341
Poisoning, food, 495
Polymorphous tuberculosis of skin, 363
Polyps, laryngeal, 491
Polyuria and polydipsia in childhood, 606
Post-morbillous pneumonia in children, peculiar form of, 219
-nasal transfusion and its importance for the fœtus, 110
Post-typhoid cholecystitis, 474
Potassium iodide in treatment of submucous fibroids, 481
Pott's disease, correction of deformities resulting from, 228, 604
forcible straightening of spine in, 94
treatment of, 226
Precocious maternity, 246
Pregnancy, influence of, on ovarian cysts, 486
rupture of spleen during, 245
Prolapsed uterus, fixation of, 734
Prolapsus, plastic operation for, 734
uteri, new operation for, 733
Prostatectomy by combined suprapubic and perineal methods, 229
Protargol for conjunctivitis, 365
Pseudo-croup, etiology of, 342
Psoriasis, histopathology of, 361
Puerperal eclampsia, 621
fever, nature and definition of, 619
septicæmia, serum treatment of, 487
Pustule, malignant, treatment of, 360
Pylorectomy, 224
Pyloric stenosis, treatment of, 223

RADICAL operation for herniæ, 721
Radiograph, importance of, 353
Radius, fractures of, 601
Red blood-corpuscles, morphological changes of, 626
Reinforcement of bromides in treating epilepsy, 477
Resuscitation of infants apparently dead, 620
Retina, detachment of, 553
glioma of, 367
Retinitis circinati, 367
Retrobulbar neuritis, 150
Retroflexion of uterus, 106, 107
Retroverted pregnant uterus, replacement of, with the elastic balloon, 110
Reviews—
Allbutt, System of Medicine by Many Writers, 448
Bacon and Blake, Manual of Otology, 705
Bastian, Aphasia and other Speech Defects, 208
Bourneville, Clinical and Therapeutical Researches on Epilepsy, Hysteria, and Idiocy, 707
Butler, Text-book of Materia Medica, Therapeutics, and Pharmacology, 589

Reviews—
Byford, American Text-book of Gynecology, Medical and Surgical, 592
Cestan, Treatment of Empyema, 704
Coplin, Manual of Pathology, 81
Davenport, Diseases of Women, 706
De Schweinitz and Randall, American Text book of Diseases of the Eye, Nose, and Throat, 700
De Schweinitz, Diseases of the Eye, 456
Dowse, The Pocket Therapist, 209
Dudley, Diseases of Women, 328
Durham, Histology: Normal and Morbid, 708
Ellis, Studies on the Psychology of Sex, 77
Fürbringer, Diseases of the Kidneys and Genito-urinary Organs, 85
Gillespie, Natural History of Digestion, 79
Hardaway, Manual of Skin Diseases, 203
Hare, Progessive Medicine, 703
Hare, Text-book of Practical Therapeutics, 589
Herz, Disturbances of the Digestive Apparatus, 79
Hill, Purification of Public Water-supplies, 86
Kelly, Atlas of Legal Medicine, 85
Kelynack, Renal Growths, 452
Klein and Edkins, Elements of Histology, 594
Lehmann, Atlas and Essentials of Bacteriology, 206
McFarland, Text-book upon Pathogenic Bacteria, 455
Marfan, Treatise on Nursing and Feeding Infants, 200
Morris, Diseases of the Skin, 591
Mracek, Atlas of Syphilis and the Venereal Diseases, 594
Murray, Introduction to Pathology and Morbid Anatomy, 204
Newsholme, Epidemic Diphtheria, 84
Osler, Principles and Practice of Medicine, 588
Poland, Traumatic Separation of the Epiphyses, 333
Ramsay, Atlas of External Diseases of the Ear, 207
Schäfer, Essentials of Histology, 455
Shield, Clinical Treatise on Diseases of the Breast, 336
Reviews—
Starr, Diseases of Children, 200
Stengel, Text-book of Pathology, 204
Stimson, Treatise on Fractures and Dislocations, 586
Thorington, Retinoscopy in the Determination of Refraction, 210
Turnbull, Artificial Anæsthetics, 205
Van Valzah and Nisbet, Diseases of the Stomach, 337
Williams, Diseases of Infancy and Childhood, 200
Zuckerkandl, Atlas and Epitome of Operative Surgery, 593
Rhachitis, treatment of, 102
Rhythmical nodding, 158
Rickets, pad on dorsum of foot in, 346
River and ground water, relation of, 372
Robb, H., endothelioma lymphangiomatodes of cervix uteri, 148
Röntgen light, medical uses of, 675
rays, bullets detected in brain by, 93
diagnosis of calculous nephritis by means by, 93
use of, to determine the relation of trachea and bronchi to thoracic walls, 313
Rubber gloves, employment of, in aseptic operations, 225
Rupture of ovary with intraperitoneal hemorrhage, 105
of uterus, spontaneous during pregnancy, 620

SALINE solutions in medical diseases, 356
Sarcoma of intestine, primary, 348,473
of orbit, 366
of testicle, 535
Scarlatina, new clinical sign in, 222
Scarlet fever, 499
in swine, 498
Sclerodermia, mixed, 739
Senile changes in Fallopian tubes, 482
Sensibility of female genitals from a medico legal stand-point, 241
Septic endocarditis, 356
Serum injections for diphtheria, 477
-therapy in infections by pyogenic micro organisms and in erysipelas, 95
treatment of puerperal septicæmia, 487
results of, 237
Should the United States Pharmacopœia recognize veratrum album and veratrum viride as one drug? 562

Skin diseases, treatment of, 113
Simon, C. E., presence of Neusser's peri nuclear basophilic granules in blood, 139
Soap, liquid, 364
Sodium chlorate in treatment of hyperchlorhydria, 99
Soluble metals, 97
Snare, new electric, for ablation of adenoid vegetations, 494
Spiller, W. G., case of erythromelalgia, 1
Spinal cord, glioma of, 648
Spleen, rupture of, during pregnancy, 245
Sporadic trichinosis, clinical features of, 251
Spur in preternatural anus, 431
Sputum of young children, 469
Squint, convergent, treatment of, 119
Stengel, A., gastroptosis, 663
Stenosis of pylorus, congenital, 715
Sterile or antiseptic ligature material? 602
Stomach, removal of entire, for carcinoma, 472
  tetany in, 339
Strabismus, mechanism of, 367
Stricture of œsophagus, 87
Stump, malignant disease of, 737
Stypticin, 481
Superheated air, 104
Suprarenal capsule, extract of, in ophthalmic practice, 368
  gland extract as a hæmostatic, 713
  glands, therapeutic uses of, 99
Sweating of feet, use of formalin for, 480
Swine, scarlet fever in, 498
Sym, W. G., retrobulbar neuritis, 150
Symphysiotomy followed by urethral fistula, 489
Syphilis, mercurial treatment in, 231
Syringomyelia, 458
  case of, 265

TABES dorsalis and syphilis, 89
  Tamponing uterus, asepsis in, 488
Tannalbin in infantile therapeutics, 359
Taylor, A. E., critical summary of question of fatty dogeneration, 569
Temperature in eclampsia, 246
Tetany checked by pylorectomy for cancer, 600
  electric relation of heart in, 599
  in dilated stomach, 339
Testicle, sarcoma of, 535
Thiocol, 611
Thomas, J J., syringomyelia, 265
Thymus, true function of, 461
Thyroglandin, 104
Thyroid extract in myxœdematous idiocy, 717
  gland, action of formol upon, 235
    and female genital organs, relation between, 105
    and myxœdema, 712
    function of, during pregnancy, 618
    pharmacological action of, 230
  new preparation of, 104
  preparations in obesity, 462
Thyroidectomy, 491
Tongue, urticaria of, 423
Tonsillar calculus, 494
Tonsillitis, acute suppurative, 494
Torsion of Fallopian tube, 485
  of parovarian cysts, 615
Toxic amblyopia, treatment of, 103
Trachea and bronchi, relation of, to thoracic walls, 313
  compression of, by enlarged thymus, 718
Transitory glycosuria in diphtheria, 628
Transplantation of ovaries, 483
  suprapubic, of penis, 354
Traumatic tetanus, antitoxins in, 613
Trendelenburg-Walcher posture in obstetric operating, 245
Trichinosis, sporadic, 251
  studies on, 369
Trophic dermatosis following fractures, 740
Tropon, 612
Trudeau, E. L., experimental studies on the preparation and effects of antitoxins for tuberculosis, 56
Tubal calculi, 617
  menstruation, 240
Tubercular peritonitis, laparotomy in, 603
Tuberculin in treatment of lupus, 481
Tuberculosis, experimental studies on antitoxins for, 56
  heredity of, 340
  of aorta, 19
  pulmonary dyspepsia in, 459
Tuberculous cystitis in children, 347
  folliculitis, 739
  meat, 498
  peritonitis cured by x-rays, 222
  persons, infection from hands of, 123
Tubes during menstruation, 484
Tumor, brain, case of, 526
  cerebellar, 125
Tumors of clitoris, benign, 106
Turpentine inhalations in experimental tuberculosis, effect of, 212

Typhoid and malarial infection, 25
bacillus, subcutaneous abscesses due to, 501
fever and trichinosis, 463
cholecystitis complicating, 275
in infancy, frequency of, 344
medical treatment of, 596
treatment of, by subcutaneous injections of artificial serum, 613
use of asoprol in treatment of, 236
orchitis, 91
perforation of intestines, 595
water-borne, 374
Typhoidal pleurisy, 627

UEBER spontane gangrän, 371
Umbilical cord, coiling of, 111
treatment of stump of, 245
Unguentum Credé in treatment of epidemic cerebro-spinal meningitis, 607
Urethritis, acute, in male, 102
Urethrotomy, external, 168
Urotropin, 357
Urticaria of tongue, 423
Uterine arteries, ligation of, 484
cough and other reflex neuroses, 237
fibroid, cancerous degeneration of, 616
spontaneous separation of, 486
fibromata, glandular elements in, 259
fibromyomata, etiology of, 736
hemorrhage, hydrastine hydrochlorate in, 485
Uterus, adenomyoma of, 485
artificial dilatation of mouth of, 111
cancer of, 615
of prolapsed, 617
fixation of, 620
igni-extirpation of, 617
retroflexion of, 106, 107
retroverted pregnant, 110, 111
spastic retroposition of, 108
spontaneous rupture of, during pregnancy, 620

VACCINE bodies, 246
Vaccinia, specific organism of, 346
Vagina, histological changes in, 238
Vaginal cysts, 482
hysterectomy, disease of adnexa following, 239
with the angiotribe, 735
incision in treatment of intraligamentary pregnancy, 487
section, 735
Vegetable trocar, 358
Venereal diseases, treatment of, 113
Ventral hernia, 734
Veratrum album and veratrum viride, 562
Verrucose tuberculosis of back of hand, 363
Voluminous myxoma of bladder, 605
Vomiting, cyclic, 465

WALCHER'S position, 621
Water-borne typhoid, 374
Whooping-cough, paralysis in, 468
Wilder, J. A., leukæmia combined with pulmonary tuberculosis, 656
Williams, F. H., an outline of some of the medical uses of the Röntgen light, 675
Wood, C. A., ocular evidences of hysteria, 42
Wood, H. C., should the United States Pharmacopœia recognize veratrum album and veratrum viride as one drug? 562
Wool-fat preparation, new, 364
Würdemann, H. V., a Study of multiple-metastatic angiosarcoma, 629

X-RAY examinations in medical practice 675
X-rays, tuberculous peritonitis apparently cured by, 222
Xanthoma glycosuricum, 116
Xeroform in treatment of skin and venereal diseases, 113
use of, in dermatology, 231
Xerostomia, case of, 343

ZOSTER, ophthalmic, 113

GENERAL LIBRARY,
UNIV. OF MICH.
JUN 25 1899

VOL. CXVII., No. 6. JUNE, 1899. No. 326.

THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

Published Monthly.

EDITED BY ALFRED STENGEL, M.D.

WITH THE CO-OPERATION IN LONDON OF

HECTOR MACKENZIE, M.A., M.D., F.R.C.P.

ORIGINAL ARTICLES

A STUDY OF MULTIPLE-METASTATIC ANGIOSARCOMA 629
BY H. V. WÜRDEMANN, M.D., ASSISTED BY SAMUEL H. FRIEND, M.D., AND NELSON M. BLACK, M.D.

A CASE OF GLIOMA OF THE LOWER CERVICAL REGION OF THE SPINAL CORD PRODUCING A TOTAL TRANSVERSE LESION, IN WHICH THERE WAS SPASTICITY OF THE LOWER LIMBS AND PERSISTENCE OF THE DEEP REFLEXES 643
BY W. H. HUDSON, M.D., LEWELLYS F. BARKER, M.D., AND SIMON FLEXNER, M.D.

A CASE OF LYMPHATIC LEUKÆMIA COMBINED WITH PULMONARY TUBERCULOSIS 656
BY E. R. BALDWIN, M.D., AND J. A. WILDER, M.D.

GASTROPTOSIS; REPORT OF A CASE IN WHICH A NEW OPERATION WAS UNDERTAKEN AND THE PATIENT GREATLY IMPROVED 663
BY ALFRED STENGEL, M.D., AND HENRY D. BEYEA, M.D.

AN OUTLINE OF SOME OF THE MEDICAL USES OF THE RÖNTGEN LIGHT 675
BY FRANCIS H. WILLIAMS, M.D.

A CRITICAL SUMMARY OF RECENT LITERATURE ON CHRONIC CONTINUOUS GASTRO-SUCCORRHŒA 693
BY D. L. EDSALL, M.D.

REVIEWS 709

PROGRESS OF MEDICAL SCIENCE

MEDICINE.—*WILLIAM OSLER, M.D., AND GEORGE DOCK, M.D.* 709
PEDIATRICS.—*LOUIS STARR, M.D., AND THOMPSON S. WESTCOTT M.D.* 715
SURGERY.—*J. WILLIAM WHITE, M.D., ALFRED C. WOOD, M.D., AND CHARLES L. LEONARD, M.D.* 720
THERAPEUTICS.—*REYNOLD W. WILCOX, M.D., LL.D.* 727
OBSTETRICS.—*EDWARD P. DAVIS, A.M., M.D.* 730
GYNECOLOGY.—*HENRY C. COE, M.D.* 733
DERMATOLOGY.—*LOUIS A. DUHRING, M.D., AND MILTON B. HARTZELL, M.D.* 736
PATHOLOGY AND BACTERIOLOGY.—*W. T. COUNCILMAN, M.D., AND F. B. MALLORY, M.D.* 741

PHILADELPHIA AND NEW YORK:

LEA BROTHERS & CO.

LONDON: J. C. NIMMO, No. 14 KING WILLIAM ST., STRAND, W. C.

Copyright 1899, by LEA BROTHERS & Co. All rights reserved. Entered at the Post-Office at Philadelphia as Second-class matter.

SUBSCRIPTION, FOUR DOLLARS A YEAR, POSTPAID.

THE MEDICAL NEWS. Subscription Price Four Dollars per annum. If taken in conjunction with THE AMERICAN

NEW EDITION. JUST READY.

Chapman's Human Physiology.

A Treatise on Human Physiology.—For Students and Practitioners. By HENRY C. CHAPMAN, M.D., Professor of Institutes of Medicine and Medical Jurisprudence in Jefferson Medical College of Philadelphia. In one handsome octavo vol. of 921 pp. with 595 illustrations. Cloth, $4.25, *net;* leather, $5.25, *net.*

Hare on Typhoid Fever. JUST READY.

The Medical Complications, Accidents and Sequelæ of Typhoid or Enteric Fever. By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Hospital. With a Special Chapter on the Mental Disturbances following Typhoid Fever, by F. X. DERCUM, M.D., Clinical Professor of Diseases of the Nervous System in the Jefferson Medical College. In one handsome octavo volume of 276 pages with 21 engravings and 2 full-page plates. Cloth, $2.40, *net.*

NEW (5th) EDITION. JUST READY.

Abbott's Bacteriology.

The Principles of Bacteriology.—A Practical Manual for Students and Physicians. By A. C. ABBOTT, M. D., Professor of Hygiene and Director of the Laboratory of Hygiene, University of Pennsylvania, Philadelphia. New (5th) edition, enlarged and thoroughly revised. Handsome 12mo., 585 pages, with 109 illustrations, of which 26 are colored. Cloth, $2.75, *net.*

THE present edition, like its predecessors, has been thoroughly revised to the date of issue, a point which has gained for the book its reputation as always a trustworthy source of knowledge on the most recent phases of its advancing science. The volume will continue to hold its leading position as a text-book for students and as a practical guide for the profession.

NEW (16th) EDITION. JUST READY.

Attfield's Chemistry.

A Manual of Chemistry: General, Medical and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. By JOHN ATTFIELD, F. R. S. New (16th) Edition. In one royal 12mo. volume of 784 pages with 88 illustrations. Cloth, $2.50, *net.*

THIS most comprehensive volume deals with the science of chemistry, and with the chemistry of every substance having interest for the followers of pharmacy and medicine. The present volume like its predecessors has been revised in conformity with the United States Pharmacopœia.

NEW, REVISED AND ENLARGED EDITION. JUST READY.

Bruce's Materia Medica & Therapeutics.

Materia Medica and Therapeutics.—By J. MITCHELL BRUCE, M.D., F.R.C.P., Physician and Lecturer on Materia Medica and Therapeutics at Charing Cross Hospital, London. New (6th) edition, enlarged and thoroughly revised. In one 12mo. volume of 600 pages. Cloth, $1.50, *net.*

LEA BROTHERS & CO., PUBLISHERS, { 706, 708 & 710 Sansom St., Philadelphia. 111 Fifth Avenue, New York.

Formalin Lamp

Schering's Formalin Disinfectant and Deodorizing Lamp.

A most energetic disinfector and destroyer of foul and decomposing odors.
An absolutely reliable agent for air purification and sterilization.
Far more efficacious and pleasant than sulphur, carbolic acid, cresolene, etc.
The most efficient destroyer of the disease-producing micro-organisms.
Invaluable in the treatment and prevention of tuberculosis, diphtheria, scarlet fever, measles, whooping-cough, catarrh, influenza, etc.
Does not injure furniture, fabrics, or material of any kind.
When the vapors of Formalin are employed in the treatment of zymotic diseases, or for ordinary air purification and sterilization, one pastil should be constantly evaporated in the upper cup of the lamp. When rapid vaporization is required the upper cup should be removed and the pastils placed directly in the lower receptacle.

Formalin Disinfector

Schering's Formalin Disinfector.

The ideal appliance for the reliable disinfection of large rooms and entire buildings; from 200 to 250 Formalin pastils of 1 gramme each (100% pure formaldehyde) can be vaporized in one disinfector at a time. Approved and recommended by the highest foreign and American authorities and adopted by many Boards of Health and School authorities.

Beta-Eucaine (Eucaine Hydrochlorate "B")

Eucaine "B" has been extensively used in all branches of surgery, dentistry, ophthalmology, etc. Favorable reports concerning it have come from a host of practitioners on both sides of the Atlantic.

In a report made at the Academy of Medicine, Paris, March 29, 1898, published in *The Bulletin Médical* of March 30, 1898, **Prof. Reclus** stated: **"Eucaine 'B'** possesses a number of undubitable advantages. In the first place, **its solution can be boiled without undergoing decomposition, thus permitting it to be sterilized by heat.** This cannot be done with cocaine. In the second place solutions of **Eucaine 'B' are stable and this is the case, to such an extent, that he has been able, in conjunction with Dr. Legrand, to perform a number of long and delicate operations with solutions that were more than four months old.** This is far from being possible with cocaine solutions, as they change at the end of four or five days. Finally, and this is really the most important point, **Eucaine 'B' is 3¼ times less toxic than cocaine."**

Glutol-Schleich

or Formalin gelatin, is an odorless, non-irritant and non-poisonous antiseptic powder, forming a hard scab in a few hours in contact with a clean wound, and of pre-eminent value in its treatment, since it renders other disinfectant measures unnecessary. Formalin is set free from the compound by the action of the tissue cells; a continuous stream penetrates every corner and crevice of the wound, and effects molecular antisepsis. Acute purulent processes are cut short, and lesions can be relied upon to run an aseptic course.

Urotropin.

A most efficient diuretic, urinary antiseptic, uric acid solvent, and remedy for calculous disease. Rapidly renders alkaline and putrid urine containing mucous, pus, uric acid, and amorphous urates normal in appearance and reaction. It sterilizes the urine, increases its quantity, and dissolves calculi and deposits. Very valuable in all suppurative diseases of the genito-urinary tract, pyelitis, cystitis with ammoniacal decomposition of the urine, phosphaturia, and also in gouty and rheumatic affections where active elimination of uric acid and the urates is required. Dose, 3 to 7½ grains two to three times a day, best administered in half a pint of simple or carbonated water.

SCHERING & GLATZ, 58 Maiden Lane, New York,
Sole Agents for the United States.

Literature furnished on application.

It Will Ratify the Wisdom of Your Choice.

J. P. Crozier Griffith, M. D., in a manual on *"The Care of the Baby,"* urgently advocates the importance of sterilizing milk as a preventive of germ infection to which he attributes many of the ills of infancy. He says:

"Various forms of Sterilizers have been advised, but one of the BEST is that known as the ARNOLD STERILIZER."

The wide experience of this authority lends force to the foregoing statement.

Valuable Formulae and Directions for the Care and Feeding of Infants mailed upon application to.....

WILMOT CASTLE & CO., 101 Elm St., Rochester, N. Y.

SAPODERMIN (hydrag. albuminat. ½% and 1%).

A neutral, non-toxic, non-irritant soap equal in germicidal power to the sublimate, yet harmless. Soothing, healing, and a nutrient to the skin. Sapodermin 1% gives best results in specific cases. Sample cake (full size) sent to physicians on receipt of ten cents to pay charges.

KRYOFINE (methoxacet-p-phenetidin).

Anodyne, antipyretic, hypnotic. An uncompounded synthetic chemical, powerful, safe, prompt, sure and pleasant in its action. Prescribed in tablet form, powder, or solution.

BISOL (bismut. Phosphoric. sol.).

May be given in solution and in smaller doses than ordinary bismuth preparations. Unsurpassed for the treatment of all gastro-intestinal disorders, the diarrhœa of typhoid and phthisis.

MENTHOXOL. **CAMPHOROXOL.**

Antiseptic solutions superior to hydrogen peroxide alone both in power and duration of effects. Non-poisonous, non-irritant, stimulating growth of healthy granulations. Excellent for wet dressings. Their stability ensures uniform activity even when kept for a long time. Sample (¼ lb.) sent prepaid to physicians on receipt of twenty-five cents to pay charges.

Literature on application. **C. BISCHOFF & CO., 87-9 Park Place New York.**

SANMETTO FOR GENITO-URINARY DISEASES.

A Scientific Blending of True Santal and Saw Palmetto in a Pleasant Aromatic Vehicle.

A Vitalizing Tonic to the Reproductive System.

SPECIALLY VALUABLE IN
PROSTATIC TROUBLES OF OLD MEN—IRRITABLE BLADDER—CYSTITIS—URETHRITIS—PRE-SENILITY.

DOSE:—One Teaspoonful Four Times a Day. **OD CHEM. CO., NEW YORK.**

McK. & R.

COMPOUND STEARATES.

Compound Stearate of Zinc (McK. & R.)

is the most satisfactory dusting powder for almost all purposes. It does not cake, never becomes rancid nor "sticky," resists moisture and does not soil the clothing.

It can be applied to the nose, throat or other passages without causing irritation or discomfort.

Compound Stearate of Zinc with Ichthyol (McK. & R.)

Ichthyol is of undoubted value in many forms of skin disease. In some cases it gives results which no other agent will produce. The objection to its use on account of its odor, etc., are largely overcome in our combination of Compound Stearate of Zinc with Ichthyol.

We shall be pleased to send sample of this or any other combination, together with Pamphlet containing full list of combinations and uses, on application.

McKesson & Robbins, - - - New York.

Sick-rooms in Summer

can be kept cool and odorless by the following practical method :—

A towel or sheet, moistened with Platt's Chlorides diluted with ten parts of water, if frequently wafted about the sick-room and then hung up, will cool and purify the air by liquid evaporation and chemical absorption.

Platt's Chlorides,

The True Disinfectant.

An odorless, colorless, liquid; powerful, safe and cheap; sold in quart bottles only, by druggists everywhere; prepared only by Henry B. Platt, Platt St., New York.

SCOTT'S EMULSION

Satisfies the Palate of the Patient

The Prescription of the Physician

1. Plain cod-liver oil is objectionable to the stomach.
2. It is digested with difficulty or not disgested at all.
3. An "emulsion" is an artificial digestion of the oil.
4. Some emulsions contain sugar, producing fermentation.
5. The "alkaloids" do not supply the most important factor, fat.
6. When cod-liver oil is indicated, so are hypophosphites.

SCOTT'S EMULSION **An ideal preparation of Cod-Liver Oil with Hypophosphites and Glycerine. Never separates, is free from sugar, it is without disagreeable odor or taste. Formula furnished to any physician.** SCOTT & BOWNE, Chemists, New York.

LISTERINE

The Standard Antiseptic.

LISTERINE is a non-toxic, non-irritating and non-escharotic antiseptic, composed of ozoniferous essences, vegetable antiseptics and benzo-boracic acid.

LISTERINE is sufficiently powerful to make and maintain surgical cleanliness in the antiseptic and prophylactic treatment and care of all parts of the human body.

LISTERINE has ever proven a trustworthy antiseptic dressing for operative or accidental wounds.

LISTERINE is invaluable in obstetrics and gynecology as a general cleansing, prophylactic or antiseptic agent, and is an effective remedy in the treatment of catarrhal conditions of every locality.

LISTERINE is useful in the treatment of the infectious maladies which are attended by inflammation of accessible surfaces—as diphtheria, scarlet fever and pertussis.

LISTERINE is especially applicable to the treatment of scarlet fever, used freely as a mouth wash or by means of the spray apparatus.

LISTERINE is extensively prescribed in typhoid fever, both for its antiseptic effect and to improve the condition of the stomach for the reception of nourishment.

LISTERINE agreeably diluted, is prescribed with very good results, in the treatment of diphtheria, both as a prophylactic and curative—internal antiseptic—agent.

LISTERINE is used extensively, with good results, in the treatment of whooping-cough.

LISTERINE diluted with water or glycerine speedily relieves certain fermentative forms of indigestion.

LISTERINE is indispensable for the preservation of the teeth, and for maintaining the mucous membrane of the mouth in a healthy condition.

LISTERINE employed in a sick room by means of a spray, or saturated cloths hung about, is actively ozonifying, and imparts an agreeable refreshing odor to the atmosphere.

LISTERINE is of accurately determined and uniform antiseptic power, and of positive originality.

LISTERINE is kept in stock by the leading dealers in drugs, everywhere.

LAMBERT'S LITHIATED HYDRANGEA.

Close clinical observation has caused Lambert's Lithiated Hydrangea to be regarded by Physicians generally as a very valuable Renal Alterative and Antilithic Agent.

Albuminuria,
Bright's Disease,
Cystitis,
Diabetes,
Gout,
Hæmaturia,
Lithæmia,
Nephritis,
Rheumatism,
Urinary Calculus,
and all forms of
Vesical Irritation.

FOR DESCRIPTIVE LITERATURE, ADDRESS

Lambert Pharmacal Co., ST. LOUIS.

NEW STANDARD WORKS ON DENTISTRY.

Burchard's Dental Pathology and Therapeutics.

A Text-book of Dental Pathology, Therapeutics and Pharmacology.—Being a Treatise on the Principles and Practice of Dental Medicine. By HENRY H. BURCHARD, M.D., D.D.S., Special Lecturer on Dental Pathology and Therapeutics at the Philadelphia Dental College, Philadelphia. In one handsome octavo volume of 575 pages, with 371 engravings and 2 colored plates. Cloth, $5.00, *net;* leather, $6.00, *net.* Just ready.

The need for an exposition of Dental Pathology in harmony with its advanced status has become imperative. Teachers as well as students have been handicapped in their work for lack of a suitable text-book on the subject We believe that this need has been adequately met in the work of Dr. Burchard. It is a faithful reflection of the present state of knowledge of the subject, and its method of exposition is in accord with the rational basis upon which the structure of modern pathology is being rapidly erected. But it is even more than an exposition of the present status of the subject. There are throughout the work evidences of original thought which all tend toward shaping the lines upon which future study of the subject is almost surely to proceed. It is this comprehensive quality and the basis it gives for an intelligent, progressive understanding of the subject which more than all else gives value to the work.

The general principles of Pathology are set forth in the first section and form the basis of exposition for the entire subject. The special applications of general principles to dental and oral diseases are elaborated in the succeeding sections which, with a section upon Dental Pharmacology, complete the work. The views set forth are in harmony with the best knowledge at present attainable on the subject. — *Dental Cosmos.*

Kirk's Operative Dentistry.

The American Text-book of Operative Dentistry.—In Contributions by Eminent Authors. Edited by EDWARD C. KIRK, D.D.S., Professor of Clinical Dentistry, University of Pennsylvania, Dept. of Dentistry. In one handsome 8vo. volume of 699 pages with 751 engravings. Cloth, $5.50, *net;* leather, $6.50, *net.*

We have only the highest praise for this valuable work. It is replete in every particular, and surpasses anything of the kind heretofore attempted. We can heartily recommend it to the profession.—*The Ohio Dental Journal.*

Will be used as a text-book in all the schools throughout America. Of great value to the practitioner. None who wish to keep abreast with the newest, best, most scientific and practical will be without it.—*Pacific Stomatological Gazette.*

Systematic, scientific and comprehensive, it will unquestionably take rank as the leading text-book on Operative Dentistry.—*Items of Interest.*

Essig's Prosthetic Dentistry.

The American Text-book of Prosthetic Dentistry.—In Contributions by Eminent Authors. Edited by CHARLES J. ESSIG, M.D., D.D.S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. In one octavo volume of 760 pages, with 983 engravings. Cloth, $6.00, *net,* leather, $7.00, *net.*

No more thorough production will be found in this or any country.— *The International Dental Journal.*

Very much the best in its line in our literature Written and edited by masters in their art. It is up to date in every particular.—*Dominion Dental Journal.*

The editor and his collaborators have presented all that can be regarded as really essential in an acceptable manner. As a text-book on Prosthetic Dentistry it is a decided step in advance of anything that has appeared on that subject.—*The Dental Cosmos.*

The standard text-book on Prosthetic Dentistry. The illustrations far surpass anything heretofore seen.—*Items of Interest.*

LEA BROTHERS & CO., Publishers, { *706, 708 & 710 Sansom St., Philadelphia.*
111 Fifth Avenue, New York.

Hunyadi János

NATURAL APERIENT WATER

IN THE TREATMENT OF

LA GRIPPE.

During the prevalence of *La Grippe* in Europe in 1889, an article by Dr. Monin in the *Gazette médicale de Paris* on *La Grippe actuelle* attracted much attention. In connection with the treatment Dr. Monin expressed himself as follows:

"The derangement of the digestive tract caused by *La Grippe* should be treated with promptness and energy if we wish to save the patient from complications or relapse. Most of our practicing physicians and professors recommend the free administration of Hunyadi János Natural Mineral Water upon the first appearance of the symptoms of the disease. It should be borne in mind that the revulsive action of this Water is always followed by an abatement of the general symptoms. We observe the abatement or disappearance of the dizziness, impaired vision, headache, ringing in the ears, nervous prostration and inquietude, all of which are characteristic symptoms of *La Grippe*.

"Continuing the use of Hunyadi János for several mornings, in doses of not quite a tumberful, one gains a complete victory over the gastro-enteric catarrh, and at the same time saves the patient, now freed from the poison of *La Grippe*, from all further inflammatory symptoms, and from the attendant wasting of the organism."

Laxative Logic

To induce catharsis without the objectionable sequalæ common to a majority of laxatives, no remedy responds to the need of the physician with more satisfaction and celerity than SYRUP OF FIGS. As made by the California Fig Syrup Co. from the highest grade Alexandria Senna, SYRUP OF FIGS has achieved a potency and recognition as an agent of established therapeutic worth. There is no preparation that simulates Nature so well in its effect. No other is better suited to the permanent relief of intestinal inactivity, a functional derangement directly responsible for the condition described as constipation. Its gentle effect upon the intestinal mucous membrane and the natural peristalsis which follows the administration of SYRUP OF FIGS gives to it a unique value as a laxative, and suggests its adaptability to women and children because of its agreeable taste and persuasive action. It is invaluable to persons who through infirmity or occupation are committed to a sedentary life. It is *simple, safe* and *reliable*, and possesses the particular merit that its use does not induce the cathartic-taking habit, and in all cases where a laxative is indicated it is a help and not a hindrance.

SPECIAL INVESTIGATION IS SINCERELY INVITED.

"Syrup of Figs" is never sold in bulk. It retails at fifty cents a bottle, and the name of "Syrup of Figs," as well as the name of the "California Fig Syrup Co," is printed on the wrappers and labels of every bottle.

CALIFORNIA FIG SYRUP CO., SAN FRANCISCO; LOUISVILLE; NEW YORK.

The National Dispensatory. Fifth Edition.

With Supplement Embracing the New Edition of **THE NATIONAL FORMULARY.**

The National Dispensatory.—Containing the Natural History, Chemistry, Pharmacy, Actions and Uses of Medicines. By ALFRED STILLÉ, M.D., LL.D., Professor Emeritus of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania, JOHN M. MAISCH, Phar. D., late Professor of Materia Medica and Botany in Philadelphia College of Pharmacy, Secretary to the American Pharmaceutical Association, CHARLES CASPARI, JR., Ph.G., Professor of Pharmacy in the Maryland College of Pharmacy, Baltimore, and HENRY C. C. MAISCH, Ph.G., Ph.D. Fifth edition, thoroughly revised and incorporating the new *U. S. Pharmacopœia* (Seventh Decennial Revision), and likewise embracing the new edition of *The National Formulary*. In one imperial octavo volume of 2025 pages, with 320 engravings Cloth, $7.25; leather, $8.00. With Ready Reference Thumb-letter Index, cloth, $7.75; leather, $8.50.

Altogether, this work maintains its previous high reputation for accuracy, practical usefulness and encyclopædic scope, and is indispensable alike to the pharmacist and physician. Every druggist knows of it and uses it; and almost every physician properly consults it when desirous of settling all doubtful questions regarding the properties, preparation and uses of drugs.—*Medical Record.*

The descriptions of materia medica are clear, thorough and systematic, as are also the explanations of chemical and pharmaceutical processes and tests. The therapeutical portion has been revised with equal care, and the statements of the action and uses have been arranged not only alphabetically under the various drugs, but for practical medicinal usefulness have also been placed at the instant command of those seeking information in the treatment of special diseases, by being arranged under the various diseases in a therapeutical index.—*Boston Medical and Surgical Journal.*

The book is recommended most highly as a book of reference for the physician, and is invaluable to the druggist in his every-day work.—*The Therapeutic Gazette.*

Caspari's Pharmacy.

A Text-Book on Pharmacy.—For Students and Pharmacists. By CHARLES CASPARI, JR., Ph.G., Professor of the Theory and Practice of Pharmacy in the Maryland College of Pharmacy, Baltimore. In one handsome octavo volume of 680 pages with 288 illustrations. Cloth, $4.50.

It has been possible to include in a convenient volume all the theoretical and practical information which the student and pharmacist will need. Its purpose is to serve as a practical guide for practical workers, and it is in this respect the most practical book possible.—*The Pacific Record of Medicine and Pharmacy.*

Culbreth's Materia Medica and Pharmacology.

A Manual of Materia Medica and Pharmacology.—Comprising All Organic and Inorganic Drugs which are and have been Official in the *United States Pharmacopœia*, together with Important Allied Species and Useful Synthetics. For Students of Medicine, Druggists, Pharmacists and Physicians. By DAVID M. R. CULBRETH, M.D., Professor of Botany, Materia Medica and Pharmacognosy in the Maryland College of Pharmacy, Baltimore. In one octavo volume of 812 pages, with 445 illustrations Cloth, $4.75.

The work ought to be at once adopted as the text-book in all colleges of pharmacy and medicine. It is concisely written and well condensed It is in short, one of the most compact and valuable works that have been issued.—*The Ohio Medical Journal.*

A thorough, authoritative and systematic exposition of its most important domain. The materia medica of the animal, vegetable and mineral kingdoms are exhaustively and practically described, including the new and important additions with which organic and synthetic chemistry has increased the powers of the physician. The series of illustrations is exceptional for the number and beauty of the engravings.—*The Canada Lancet.*

LEA BROTHERS & CO., PUBLISHERS, { *706, 708 & 710 Sansom St., Philadelphia.*
111 Fifth Avenue, N. Y.

SYR. HYPOPHOS. CO., FELLOWS

Contains the Essential Elements of the Animal Organization—Potash and Lime;

The Oxidising Agents—Iron and Manganese;

The Tonics—Quinine and Strychnine;

And the Vitalizing Constituent—Phosphorus; the whole combined in the form of a Syrup with a **Slightly Alkaline Reaction.**

It Differs in its Effects from all Analogous Preparations; and it possesses the important properties of being pleasant to the taste, easily borne by the stomach, and harmless under prolonged use.

It has Gained a Wide Reputation, particularly in the treatment of Pulmonary Tuberculosis, Chronic Bronchitis, and other affections of the respiratory organs. It has also been employed with much success in various nervous and debilitating diseases.

Its Curative Power is largely attributable to its stimulant, tonic and nutritive properties, by means of which the energy of the system is recruited.

Its Action is Prompt; it stimulates the appetite and the digestion, it promotes assimilation, and it enters directly into the circulation with the food products.

The prescribed dose produces a feeling of buoyancy, and removes depression and melancholy; *hence the preparation is of great value in the treatment of mental and nervous affections.* From the fact, also, that it exerts a double tonic influence, and induces a healthy flow of the secretions, its use is indicated in a wide range of diseases.

NOTICE—CAUTION.

The success of Fellows' Syrup of Hypophosphites has tempted certain persons to offer imitations of it for sale. Mr. Fellows, who has examined samples of several of these, **finds that no two of them are identical,** and that all of them differ from the original in composition, in freedom from acid reaction, in susceptibility to the effects of oxygen when exposed to light or heat, **in the property of retaining the strychnine in solution,** and in the medicinal effects.

As these cheap and inefficient substitutes are frequently dispensed instead of the genuine preparation, physicians are earnestly requested, when prescribing the Syrup, to write "Syr. Hypophos. **Fellows.**"

As a further precaution, it is advisable that the Syrup should be ordered in the original bottles; the distinguishing marks which the bottles (and the wrappers surrounding them) bear, can then be examined, and the genuineness—or otherwise—of the contents thereby proved.

Medical Letters may be addressed to:

Mr. FELLOWS, 48 Vesey Street, New York.

Complete Work Now Ready.

A System of Practical Medicine.

In Contributions by Representative American Authors.

Edited by ALFRED L. LOOMIS, M. D., LL. D.

Late Professor of Pathology and Practical Medicine in the New York University, and

W. GILMAN THOMPSON, M. D.

Professor of Medicine in Cornell University Medical College, New York.

In four very handsome octavo volumes of about 900 pages each, fully illustrated. Per volume cloth, $5.00; leather, $6.00; half morocco, $7.00. For sale by subscription only. For full circular address the Publishers.

The American System of Practical Medicine will rapidly take its place among the best works of internal medicine ever published in this country. It is so thorough, so complete, so well conceived, and so well written, it represents so perfectly American medical thought and teaching that it is bound to occupy for many years an exalted station.—*The Medical News.*

It is the design of this work to cover the entire field of general and special medicine. It is essentially practical and rich in information needed in the physician's daily routine of practice. Nothing, seemingly, has been omitted from the text that will benefit the practitioner. The young practitioner will appreciate the vivid clinical pictures and valuable therapeutical contributions. We consider it the foremost work on practical medicine yet published.—*The Medical Fortnightly.*

Particularly full in the details of treatment. The work is a complete and authoritative statement of the practical part of medicine as it stands to-day. It is in every respect the most modern of works.—*Ohio Medical Journal.*

Complete Work Now Ready.

A System of Surgery.

BY AMERICAN AUTHORS.

Edited by FREDERIC S. DENNIS, M. D.

Professor of the Principles and Practice of Surgery, Bellevue Hospital Medical College, New York; President of the American Surgical Association, etc.

In four imperial octavo volumes containing 3652 pages, 1585 engravings and 45 full-page plates in colors and monochrome. Price per volume, cloth, $6.00; leather, $7.00; half morocco, $8.50. For sale by subscription only. For prospectus with order blank address the Publishers.

There really is now no complete work in English which can be considered as the rival of this.—*The American Journal of the Medical Sciences.*

It gives a careful and accurate account of surgery that is worthy of the position which surgery has attained in the great republic whence it comes.—*The London Lancet.*

A work of great magnitude and unrivalled importance. A practical exposition of the world's most advanced surgery at the close of the nineteenth century. A complete encyclopædia of modern surgery, authoritative in text, abundant in illustration, serviceable for every surgeon and for every general practitioner.—*Dominion Medical Monthly.*

The best work on surgery published in English.—*The St. Louis Medical and Surgical Journal.*

LEA BROTHERS & CO., PUBLISHERS, { *706, 708 & 710 Sansom St., Philadelphia.* / *111 Fifth Avenue, New York.*

THE GREAT FACT IN MODERN MEDICINE:

"The Blood is the Life,"
And Where Nature fails to make Good Blood,
WE CAN INTRODUCE IT.

BOVININE is Bovine Blood Unaltered from the Arteries of the Bullock;
The Universal Auxiliary of Modern Medicine and Surgery,
and the TRUE "ANTITOXIN" of Healthy Nature.

In the more enlightened progress of Modern Medicine, "Blood-letting" has given place to Blood-*getting*.

Aye! Get Good Blood—but How? Not by the Alimentary Process. It has already failed to do its work (else the patient would not be sick); and in acute disease must not even be allowed to do the work it can. Stimulate as you will, the whole sum of the patient's alimentary power when fully forced into play, is unable to keep up the nourishing and supporting contents of the blood. There is absolutely but one thing to do; and, thank God, that can be done, usually with success, as ten-thousand-fold experience has proved. That one thing is this: where Nature fails to PRODUCE good and sufficient Blood, WE CAN INTRODUCE IT from the arteries of the sturdy bullock, by the medium of BOVININE.

The vital activity of this living blood conserve rests on no man's assertion: it speaks for itself, to every properly equipped physician who will test its properties microscopically, physically, or therapeutically.

TRY IT IN PRACTICE.

TRY it in ***Anæmia,*** measuring the increase of red cells and hæmaglobin in the blood as you proceed, together with the improving strength and functions of your patient.

Try it in ***Consumption,*** with the same tests from week to week.

Try it in ***Dyspepsia*** or Malnutrition of young or old, and watch the recuperation of the paralysed alimentary powers.

Try it in ***Intestinal*** or gastric irritation, inflammation, or ulceration, that inhibits food itself, and witness the nourishing, supporting and healing work done entirely by absorption, without the slightest functional labor or irritation; even in the most delicate and critical conditions, such as Typhoid Fever and other dangerous gastro-intestinal diseases, Cholera Infantum, Marasmus, Diarrhœa, Dysentery, etc.

Try it per rectum, when the stomach is entirely unavailable or inadequate.

Try it by ***subcutaneous*** injection, when collapse calls for instantaneous blood supply—so much better than blood-*dilution!*

Try it on ***Chronic Ulceration,*** in connection with your antiseptic and stimulating treatment (which affords no nourishment) and prove the certainty and power of topical blood nutrition, abolishing pus, stench, and PAIN, and healing with magical rapidity and *finality.*

Try it in ***Chronic Catarrhal*** Diseases; spraying it on the diseased surfaces, with immediate addition of peroxide of hydrogen; wash off instantly the decomposed exudation, scabs and dead tissue with antiseptic solution (Thiersch's); and then see how the mucous membrane stripped open and clean, will absorb nutrition, vitality and health from intermediate applications of pure bovinine.

Try it on the ***Diphtheritic Membrane*** itself, by the same process; so keeping the parts clean and unobstructed, washing away the poison, and meanwhile sustaining the strength independently of the impaired alimentary process and of exhaustive stimulants.

Try it on ***anything,*** except plethora or unreduced inflammation; but first take time to regulate the secretions and functions.

Try it on the ***patient*** tentatively at first, to see how much and how often, and in what medium, it will prove most acceptable—in water, milk, coffee, wine, grape, lemon or lime juice, broth, etc. A few cases may even have to begin by drops in crushed ice.

A New Hand-book of Hæmatherapy for 1898, epitomizing the clinical experience of the previous three or four years, from the extensive reports of Hospital and private practice. To be obtained of

THE BOVININE COMPANY, 75 W. Houston Street, New York.

A Manual of Otology.

By GORHAM BACON, M. D.

Professor of Otology in Cornell University Medical College, New York.

With an Introduction by CLARENCE J. BLAKE, M.D., Professor of Otology in the Harvard Medical School, Boston, Mass. In one handsome 12mo. volume of 398 pages, with 109 engravings, and a colored plate. Cloth, $2.00, *net.*

Especially adapted to the needs of students and general practitioners. Dr. Bacon is one of the most progressive otologists in this country. It is the *best* manual upon otology. An intensely practical book for students of medicine—*Cleveland Journal of Medicine.*

We know of no small book so full of useful information regarding diseases of the ear.

This manual contains the essential facts of otology as they are understood to-day, including the anatomy and physiology of the ear, its diseases and their treatment. The author is both an experienced teacher and practitioner. —*Buffalo Medical Journal.*

Taylor's Medical Jurisprudence. New Edition.

A Manual of Medical Jurisprudence.—By ALFRED S. TAYLOR, M.D., Lecturer on Medical Jurisprudence and Chemistry in Guy's Hospital, London. New American from twelfth English Edition. Thoroughly revised by CLARK BELL, Esq., of the New York Bar. In one octavo volume of 831 pages, with 54 engravings, and 8 full-page plates. Cloth, $4.50; leather, $5.50.

This book covers most thoroughly the many details of medical jurisprudence in all its numerous branches and will undoubtedly continue in favor as the text-book in schools of medicine and law, and as a reference book for the general practitioner.—*Chicago Medical Recorder.*

Considered final authority by the courts of all English speaking countries, a fact that is of very great importance for medical men. No other work has attained so high a standard in this respect. No work of this character that has ever emanated from the press is so complete and thorough in its consideration of poisoning—*The Medical Age.*

It is the authority accepted as final by the courts of all English-speaking countries. This is the important consideration for medical men. It is thorough, authoritative and modern.—*Albany Law Journal.*

Nettleship on the Eye. NEW AND THOROUGHLY REVISED EDITION.

Diseases of the Eye.—By EDWARD NETTLESHIP, F.R.C.S., Ophthalmic Surgeon at St. Thomas' Hospital, London. Surgeon to the Royal London (Moorfields) Ophthalmic Hospital. Revised by HOLMES SPICER, F.R.C.S., Ophthalmic Surgeon to the Metropolitan Hospital. New (5th) American from the sixth English Edition. With a Supplement on the Detection of Color Blindness and Testing for Acuteness of Sight and Hearing, by WILLIAM THOMSON, M.D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia. In one 12mo. volume of 521 pages, with 161 illustrations, selections from Snellen's test-types and formulæ, and 2 colored plates. Cloth, $2.25.

This work for compactness, practicality and clearness has no superior in the English language. —*Journal of Medicine and Science.*

Contains the latest and best ophthalmological ideas of both continents.—*The Physician and Surgeon.*

The most generally adopted of all works on ophthalmology as a college text-book in America.—*Virginia Medical Semi-Monthly.*

An epitome of the best ophthalmology of modern times.—*The Medical Standard.*

It presents the whole subject of modern ophthalmology in accordance with the needs of the student or general practitioner in a condensed and practical manner, easily read, easily retained, reliable and accurate.—*The Phila. Polyclinic.*

LEA BROTHERS & CO., PUBLISHERS, { *706, 708 & 710 Sansom St., Philadelphia.*
111 Fifth Avenue, New York.

The University and Bellevue Hospital Medical College.

MEDICAL DEPARTMENT OF THE NEW YORK UNIVERSITY.

Since the union of these two old established Medical Schools, the facilities for teaching modern medicine have been greatly increased and the Faculty enlarged.

The Supplemental Session will begin on Wednesday, May 3d and continue until July 1st. In this session the instruction is divided under three heads: 1. Clinical Instruction. 2. Recitations. 3. Laboratory Work. The courses are especially intended to prepare students for the subsequent winter session.

The regular winter session begins on Monday, October 2d, 1899, and continues for about 8 months.

Attendance upon 4 courses of lectures is required for graduation.

Students who have attended one or more regular courses at other accredited Medical Colleges are admitted to advanced standing on presentation of credentials, but only after examination on the subjects embraced in the curriculum of this College.

Examination for advanced Standing, June 28 and 29, September 29 and 30, 1899.

Graduates of other accredited Medical colleges are admitted to advanced standing without examination.

It is designed to make this pre-eminently a school of practical medicine, and the course of instruction has been arranged with this purpose constantly in view.

Full information in regard to examinations and conditions for admission to advanced standing; the circular for the supplemental session of 1899 and the annual circular giving full details of course, requirements for matriculation, graduation and other information, (published in May, 1899). Can be had on application to

Dr. EGBERT LeFEVRE, 26th Street and First Avenue, New York City.

EDWARD G. JANEWAY, M.D., DEAN.

WOMAN'S MEDICAL COLLEGE of the NEW YORK INFIRMARY

FOR WOMEN AND CHILDREN,

321 East Fifteenth Street, New York. **Established 1865.**

Session 1898-99 opened October 1, 1898. Four years' graded course. Lectures, Clinics, Recitations, Instruction and Practice Work, under supervision, in Laboratories and Dispensary of College and New York Infirmary. Operations and Clinics in most of the city Hospitals and Dispensaries open to Women Students. For catalogue, etc., address

EMILY BLACKWELL, M.D., Dean, 321 East Fifteenth St., New York.

YALE UNIVERSITY

Offers candidates for the degree of DOCTOR of MEDICINE a graded course of study, consisting of PERSONAL INSTRUCTION in Class-room, Laboratory and Clinic.

For announcements of the course, address

PROF. HERBERT E. SMITH,

Dean of the Faculty of Medicine, Yale University, NEW HAVEN, CONN.

St. Louis Medical College, Missouri Dental College,

Session begins September 22, 1898. **Session begins October 10, 1898.**

DEPARTMENTS OF WASHINGTON UNIVERSITY.

Our laboratories are well equipped and admirably adapted for the comfort and instruction of 400 students. Our Dental Infirmary offers unequalled opportunties for the finest work. Our Clinical facilities in medicine are of the best, and include out-clinics, private hospitals, and a full share of the work in the city institutions.

Apply at the College Building, 1806 Locust St. *HENRY H. MUDD, M D, Dean.*

WALNUT LODGE HOSPITAL, HARTFORD, CONN.

Organized in 1880 for the special medical treatment of ALCOHOL AND OPIUM INEBRIATES.

Elegantly situated in the suburbs of the city, with every appointment and appliance for the treatment of this class of cases, including *Turkish, Russian, Roman, Saline* and *Medicated Baths*. Each case comes under the direct personal care of the physician. Experience shows that a large proportion of these cases are curable, and all are benefited from the application of exact hygienic and scientific measures. This institution is founded on the well-recognized fact that *Inebriety* is a *disease*, and *curable*, and all *these cases* require *rest, change of thought and living*, in the *best surroundings*, together with every means known to science and experience to bring about this result. Only a limited number of cases are received. Applications and all inquiries should be addressed,

T. D. CROTHERS, M. D., Sup't Walnut Lodge, Hartford, Conn.

ECTHOL, NEITHER ALTERATIVE NOR ANTISEPTIC IN THE SENSE IN WHICH THOSE WORDS ARE USUALLY UNDERSTOOD. IT IS ANTI-PURULENT, ANTI-MORBIFIC--A CORRECTOR OF THE DEPRAVED CONDITION OF THE FLUIDS AND TISSUES.

SAMPLE (12-oz.) BOTTLE SENT FREE ON RECEIPT OF 25 CTS.

FORMULA:--Active principles of Echinacia and Thuja.

BROMIDIA
IODIA
PAPINE

BATTLE & CO., CHEMISTS CORPORATION, ST. LOUIS, MO., U. S. A.

TO THE MEDICAL PROFESSION

"H. V. C."

Hayden's Viburnum Compound

THE STANDARD

ANTISPASMODIC,

Always safe and reliable for the suppression of all **Pain, Spasms and Convulsions. No Sequelæ.**

Specially recommended in **Cramp, Colic, Inertia and Tedious Labor.**

Greatly superior to **Ergot.**

For all information, address

THE NEW YORK PHARMACEUTICAL COMPANY

BEDFORD SPRINGS, MASS.

EMPLOYMENT.

We frequently have vacancies for salesmen who can sell medical books.

The medical book salesman is *not* a canvasser. He sells to the doctor the tools of his trade.

Any one with the knack of a salesman can make a good living by the sale of our books.

Physicians are desirable if, to their knowledge of medicine, they add business ability.

Our best salesmen are doctors. They find the work hard but it pays better than the practice of medicine on the average.

We shall be glad to afford you further information if you will write to us.

Address The Manager, Subscription Department.

LEA BROTHERS & CO.,

706, 708 AND 710 SANSOM STREET, PHILADELPHIA.

Schieffelin's Medicated Soaps

are made from pure, neutral, white soap, and contain no sugar, starch, silicate or filling material, and no coloring or pigment is added.

We guarantee that the percentage of medicament has been added as per label, and that the soap is thoroughly mixed. A descriptive pamphlet mailed to applicants.

Schieffelin & Co., New York.

Schieffelin & Co.'s

(NEW YORK)

Soluble Pills and Granules.

Reliable. Soluble. Beautiful.

The Perfection of Pill Making.

Examine Them and Notice

Their Perfect Uniformity in size and weight.
The Crystal Transparency of the coating.
They are the only pills which show the precise colors of the masses.

Test Them and Prove

Their Ready Solubility.
Their Exact Conformity to their several Formulas.
The Certainty of Proper Therapeutic Effects.

Our list of Pills and Granules embraces those made according to the formulas of the U. S. Pharmacopœia; also most of those in common use among the profession.
We also manufacture pills to order.

SPECIFY Schieffelin's WHEN PRESCRIBING.

All "PERCENTAGE" MODIFICATIONS of milk are defective in that they do not touch the fundamental difference between cows' and human milk,—the character of the caseine. The caseine remains caseine, whatever its percentage.

By the testimony of all authorities, chemical, physiological and clinical, caseine differs materially from the soluble albuminoids of woman's milk. Science, here, simply confirms the teachings of experience.

By means of Fairchild's **PEPTOGENIC POWDER** and method, the caseine of cow's milk is converted into the soluble form characteristic of the albuminoids of human milk. The "pivotal feature" of this process is the action of the proteolytic enzyme; this ferment is destroyed in the final heating of the prepared milk, as it is rendered inert at any temperature above 160° F., and consequently is not present in an active form in the food when ready for the nursing bottle.

With the proper modification of caseine, there remains in the case of the average normal infant, no necessity for peculiar or special percentages of milk constituents; mothers' milk then becoming the realisable as well as the theoretical standard.

Milk prepared with the **PEPTOGENIC POWDER** is not only a chemical, but also a physiological approximation to mothers' milk, in composition, digestibility and nutritive qualities. FAIRCHILD BROS. & FOSTER, New York.

MALTINE is a highly concentrated extract of barley, wheat and oats. Barley alone is employed in the manufacture of all other malt extracts, and not one of them is as highly concentrated as MALTINE.

MALT EXTRACTS which are thinner than MALTINE are thinner for the simple reason that they contain more water—are not concentrated as MALTINE is and therefore are less nutritious and more costly.

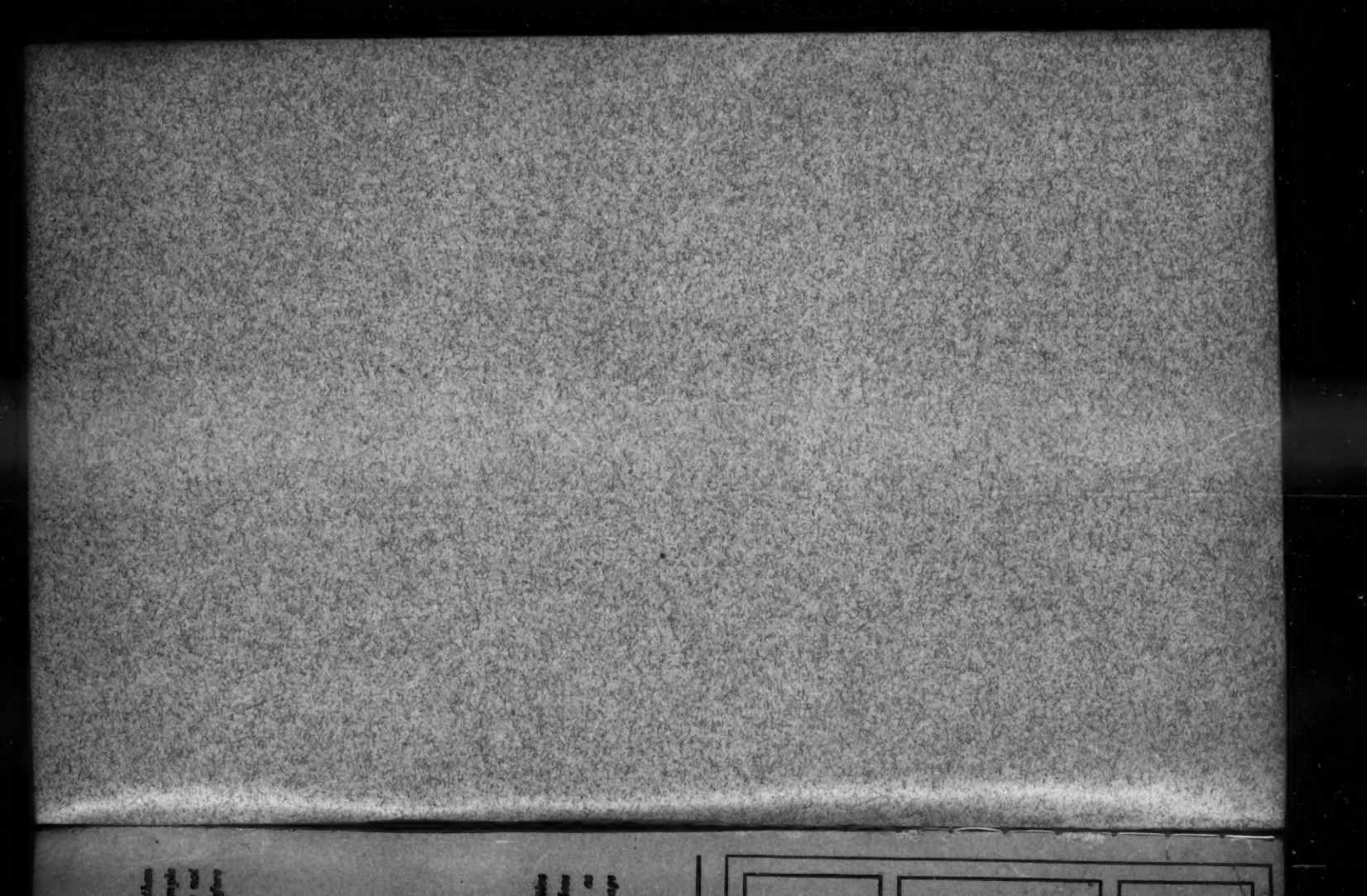
Maltine

MALTINE is rendered particularly delicious and refreshing if administered with any of the aerated waters, milk, wine or spirits. Thus a pleasing change is afforded to capricious or fastidious invalids.

MALTINE, aside from its great nutritive value, is so rich in Diastase that a dose readily digests all the starchy food, such as bread, potatoes and cake, which the average adult eats at a single meal.

HOME MODIFICATION OF FRESH COW'S MILK

Mellin's Food affords the simplest means and gives the best results

"Mellin's Food actually assists to digest milk."—G. W. Wigner, F. I. C., F. R. C., President Soc. of Pub. Analysts, London, Eng.

MELLIN'S FOOD COMPANY . . . . . BOSTON MASS.